Draft Environmental Impact Report

101 MISSION STREET OFFICE BUILDING EE 79.236

Publication Date: 22 May 1981

Comment Period: 22 May 1981 through 25 June 1981

Public Hearing Date: 25 June 1981

SAN FRANCISCO
DEPARTMENT OF CITY PLANNING 100 LARKIN STREET · SAN FRANCISCO, CALIFORNIA 94102

DRAFT ENVIRONMENTAL IMPACT REPORT

101 MISSION STREET

OFFICE BUILDING

EE 79.236

TABLE OF CONTENTS

TABLE OF CONTENTS

(continued)

FIGURES

LIST OF TABLES

SUMMARY

PROJECT DESCRIPTION

The proposed 101 Mission Street Office Building would be located at the south corner of the intersection of Mission and Spear Streets, Lot 1, Assessor's Block 3717, San Francisco, California.

The project sponsor, Eric Schou, owner of the project site, desires to provide an office building to lease space catering to professional firms such as engineering firms, law firms, accountants and architects, with several tenants per floor. The project sponsor would seek to receive a reasonable return on investment capital.

The proposed structure would contain 20 floors above the ground floor and mezzanine, each floor being 13 feet in height, rising a total of 273 feet. The building would measure 131 feet along Spear Street and about 85 feet along Mission Street. The building would contain about 11,000 gross square feet per floor with a total of about 219,350 gross square feet. Net rentable square feet would be about 181,960. The project site has an area of 12,605 square feet, and a floor area ratio of 14:1.

The building's main pedestrian entry would face Spear Street. A smaller pedestrian entry would orient toward Mission Street. A truck loading area leading to a freight elevator would be provided adjacent the south face of the building. The project would provide parking 3 delivery trucks and 2 service vehicles in the basement.

The building would be constructed using precast concrete panels containing crushed granite aggregate, which would be exposed on the surface. Tinted glass would be set between the panels and held in place by aluminum window frames. The corners of the building would be rounded. Colors of the aggregate and glass have not yet been selected.

Construction of the building including tenant improvements would be expected to cost about $17,548,000 (1981 dollars). Construction would be expected to occur over about a 2-year period beginning in late-1981 and completed in late-1983. The building would be expected to house between 700 and 900 employees.

The site is located in the C-3-0 (Downtown Office) district. The basic floor area ratio (FAR) applying to the C-3-0 district is 14:1, exclusive of development bonuses. Requested as bonuses for the project are: multiple building entrances, sidewalk widening and rooftop observation deck for a total of 43,293 square feet. The proposed project would require Discretionary Review by the City Planning Commission.

IMPACTS AND MITIGATION MEASURES

A. LAND USE

Impact: The project would contribute to cumulative office development in the South-of-Market area. Other secondary impacts, such as the development of retail, commercial and service-related establishments, including restaurants, may occur as a result of the market generated by additional employment in the area.

Approximately 8,000,000 square feet of office space are projected for development in the downtown area over the next 5 years.

B. VISUAL AND URBAN DESIGN

Impact: The structure would be seen as a new element taking its place in the City's emerging urban form comprised of taller buildings replacing lower structures, over an increasing land area including the Financial District and South of Market area.

C. TRANSPORTATION

Impact: The proposed project would generate about 3,050 daily person trips. Approximately 620 (20%) of the daily trips would occur during the evening peak hour. The City projection of cumulative travel for other projects is approximately 25,500 peak hour person trips.

Impact: The quality of traffic flow on surface streets would degrade as a result of cumulative development; the freeways and freeway ramps are the critical links in the overall network. With these facilities currently operating under congested conditions during peak hours, the traffic increases generated by cumulative downtown development will add to this congestion with the likely result that the peak period will be extended if all proposed office space were built.

Mitigation: Upon completion of the project, the project sponsor would, in consultation with the Department of City Planning, promote a flexible time system for employee working hours and a preferential parking program for carpools and vanpools to reduce peaks of congestion in the transportation system. The project sponsor would encourage transit use by employees in the proposed building by means including the sale on-site of BART and MUNI passes, and promoting an employee carpool/vanpool system.

Impact: The project would add (up to) 1% to the 1983 MUNI load factors. However, cumulative development would cause 8 downtown MUNI lines (with load factors greater than 1.00) to experience congestion.

Mitigation: The project sponsor would contribute funds for maintaining and augmenting MUNI service, in an amount proportionate to the demand created by the project through an equitable funding mechanism to be developed by the City.

Impact: With a design capacity of 8,085 peak-hour passengers, the effect of cumulative downtown development on the Golden Gate Transit would be to raise patronage beyond this figure by 1983.

Impact: Based upon the trip generation characteristics of the project, the parking demand has been calculated at approximately 220 long-term spaces and 80 short-term spaces.

It is likely that parking would shift further from downtown with increased downtown with increased demand south of Folsom Street and beyond.

Mitigation: The project sponsor would participate in a future areawide study of current parking conditions and future needs.

D. NOISE

Impact: Projected instantaneous maximum traffic noise levels of up to 56 dBA inside the building could interrupt a speaker talking in a normal tone of voice in a small conference room. These maximum levels would not interfere with telephone conversations; however, they would be sufficiently high to cause some distraction.

Mitigation: A detailed analysis of the noise reduction requirements of the proposed building would be made and needed noise insulation features included in the design.

Impacts: During construction, noise-generating activities would occur within 5 to 10 feet of the outside of adjacent buildings. Noise levels inside these buildings could reach 100 dBA during piledriving which would shake the buildings. During piledriving, sound levels in the office buildings across Mission Street from the site and in the Rincon Annex Post Office would be expected to reach about 75 dBA inside.

Mitigation: Construction noise in San Francisco is regulated by the Noise Ordinance. Impact tools and equipment and piledrivers must have muffled exhausts. To mitigate piledriving noise impact, the project sponsor has agreed to apply to the Department of Public Works for permission to do piledriving after office hours, and on weekends, if necessary.

E. CLIMATE AND AIR QUALITY

Impact: Shadows from the proposed building would affect sidewalk areas of the Mission and Spear Street intersection in all seasons at midday.

Mitigation: The extent of shadows cast on the Mission and Spear Street intersection could be reduced by changing the building size and shape, or stepping the height of the building back from the intersection. A building of reduced interior floor area would result from these measures. The project sponsor has not agreed to these measures for economic reasons.

Impact: Earthmoving and grading would generate dust and suspended particulates.

Mitigation: Watering to control dust on-site during construction would be done by the project sponsor. An effective watering program (complete coverage twice daily) would reduce emissions by about 50%.

Impact: Continued development north and south of Market near the site beyond the year 1983 could increase traffic levels and congestion to a point where federal carbon monoxide standards would be exceeded.

Mitigation: Transportation mitigation would also mitigate air quality impacts. These measures would include car-pooling, van-pooling, and staggered work hours.

F. SOILS AND SEISMICITY

Impact: If a severe earthquake, such as the 1906 San Francisco earthquake of estimated Richter magnitude 8.3, were to occur along the San Andreas Fault in the Bay Area, groundshaking at the site could have such effects as cracking building walls and permanent deformation of structural members.

Mitigation: Further geotechnical engineering investigations including test borings would be done to determine soil characteristics and thickness, to recommend specific foundation measures.

The structure would be designed to meet the seismic design standards of the San Francisco Building Code, or the more stringent seismic standards of the Uniform Building Code (UBC) or the Structural Engineers Association of California (SEAOC). Computer analysis of the structural frame would be performed in order to design the seismic constraint of the structural frame.

G. ENERGY

Impact: Assuming a 50-year lifetime for the building, the estimated lifetime energy cost would be 3.5 trillion BTU. This is equivalent to approximately 660,000 barrels of crude oil (1 barrel = 42 gallons).

Mitigation: Design features would be incorporated into the building to minimize energy consumption and comply with the requirements of California Administrative Code, Title 24 Energy Conservation Standards.

H. ECONOMICS

Impacts: The project would continue the trend toward higher rents and more intensive use of land in the downtown business district. The market demand for office space in new buildings near the proposed project is expected to generate annual rents in the $25 to $30 range (or higher) by the time the 101 Mission Street Building would be completed.

Impact: Potential revenues to the City and County of San Francisco could range from $356,800 to $400,800. It would be expected that in the short term the projected revenues to the City and County of San Francisco would exceed the incremental costs directly attributable to the project at the time of construction, although Proposition 13 limitations on property tax increases could change this prediction during the life of the building.

I. HISTORICAL

Impact: It is not feasible to rule out the possiblity of encountering historical resources or a buried hulk during construction of the new structure.

Mitigation: If historical artifacts or a buried hulk are discovered during construction of the proposed project, the contractor would stop work in the area of the find to permit professional evaluation and/or retrieval of the find.

J. GROWTH INDUCEMENTS

Impact: The project would continue the trend of intensifying office uses in the downtown area. Together with other new office development near the site, it could stimulate further office growth in the immediate vicinity, on lots now used for parking or in low-rise structures containing businesses and light industrial uses (such as warehousing). Employee purchasing power could stimulate employee-oriented retail activity in the vicinity of the project site.

ALTERNATIVES

Alternatives to the proposed project considered include the no-project alternative, alternative site uses, mixed use office and housing in a single structure, development under interim bonus controls, and alternative designs.

CHAPTER I
PROJECT DESCRIPTION

A. LOCATION

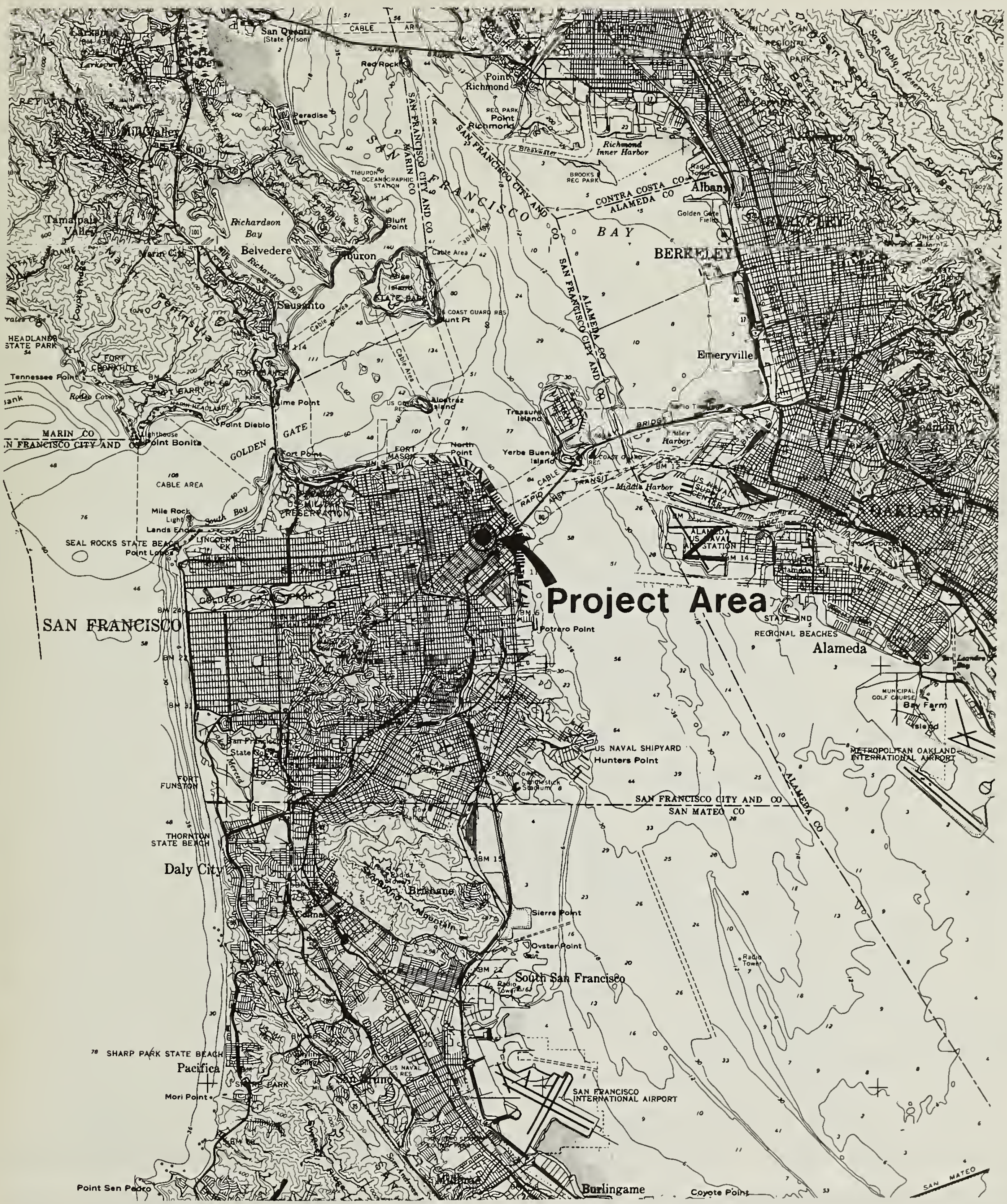
The proposed 101 Mission Street Office Building would be located at the south corner of the intersection of Mission and Spear Streets, Lot 1, Assessor's Block 3717, Lot 1, San Francisco, California. The site measures about 138 feet along Spear Street and about 92 feet along Mission Street, a total of 12,605 square feet. The about general location of the project site is shown in Figure 1. The precise location of the project site is shown in Figure 2, page 12.

B. OBJECTIVES OF SPONSOR

The project sponsor, Eric Schou, owner of the project site, desires to provide an office building to lease space to professional firms such as engineering firms, law firms, accountants and architects, with several tenants per floor. The project sponsor would seek to receive a reasonable return on investment capital (see Section III.I, Economics, page 95), and bases projected tenant demand on observed historical trends on leasing patterns in the area indicating a continued need for office space in San Francisco. However, specific tenants are not known at this time.

C. PROJECT CHARACTERISTICS AND SCHEDULING

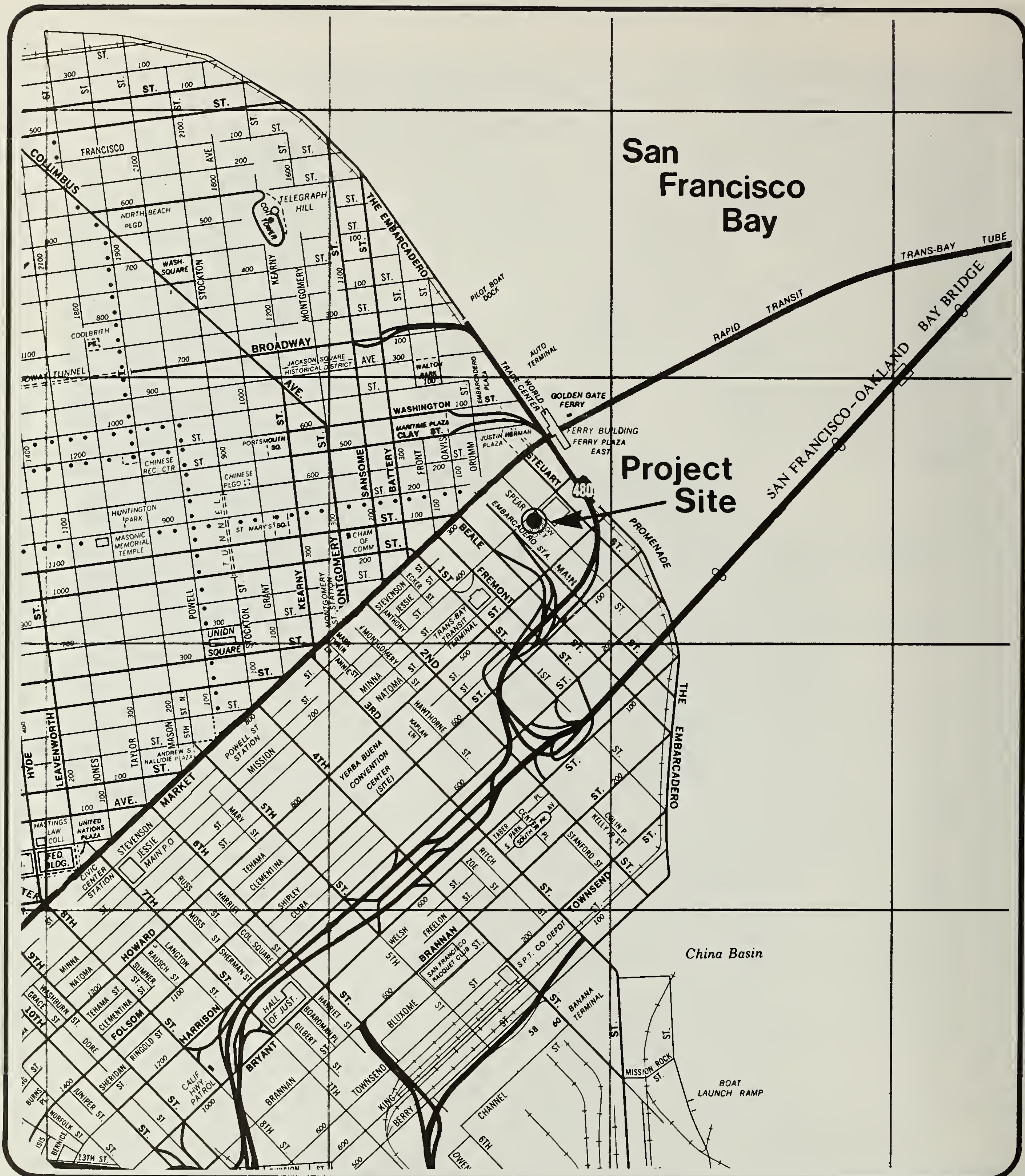
The proposed structure would contain 20 floors above the ground floor and mezzanine (excluding the elevator core machine room and enclosed public observation deck on the roof) rising 273 feet (Figures 3 and 4, pages 13 and 14. The building would measure 131 feet along Spear Street and 85 feet 6 inches along Mission Street (Figure 8, page 19). The building would contain



Regional Location Map

Source: U.S.G.S.

Figure No.1



Site Location Map

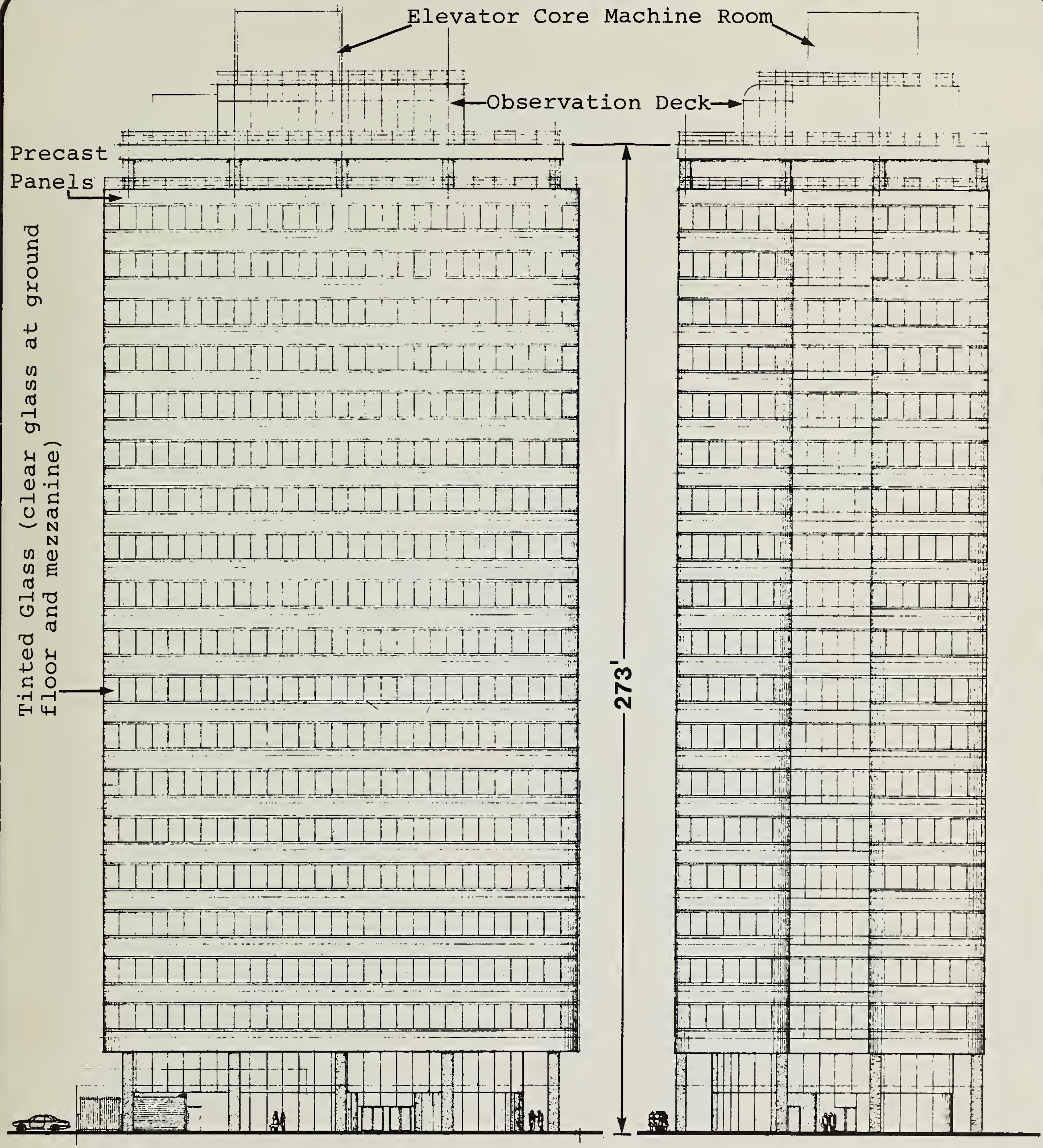
Basic map reproduced by permission of the California State Automobile Association, copyright owner.

North

0 400 800 1600

Scale Feet

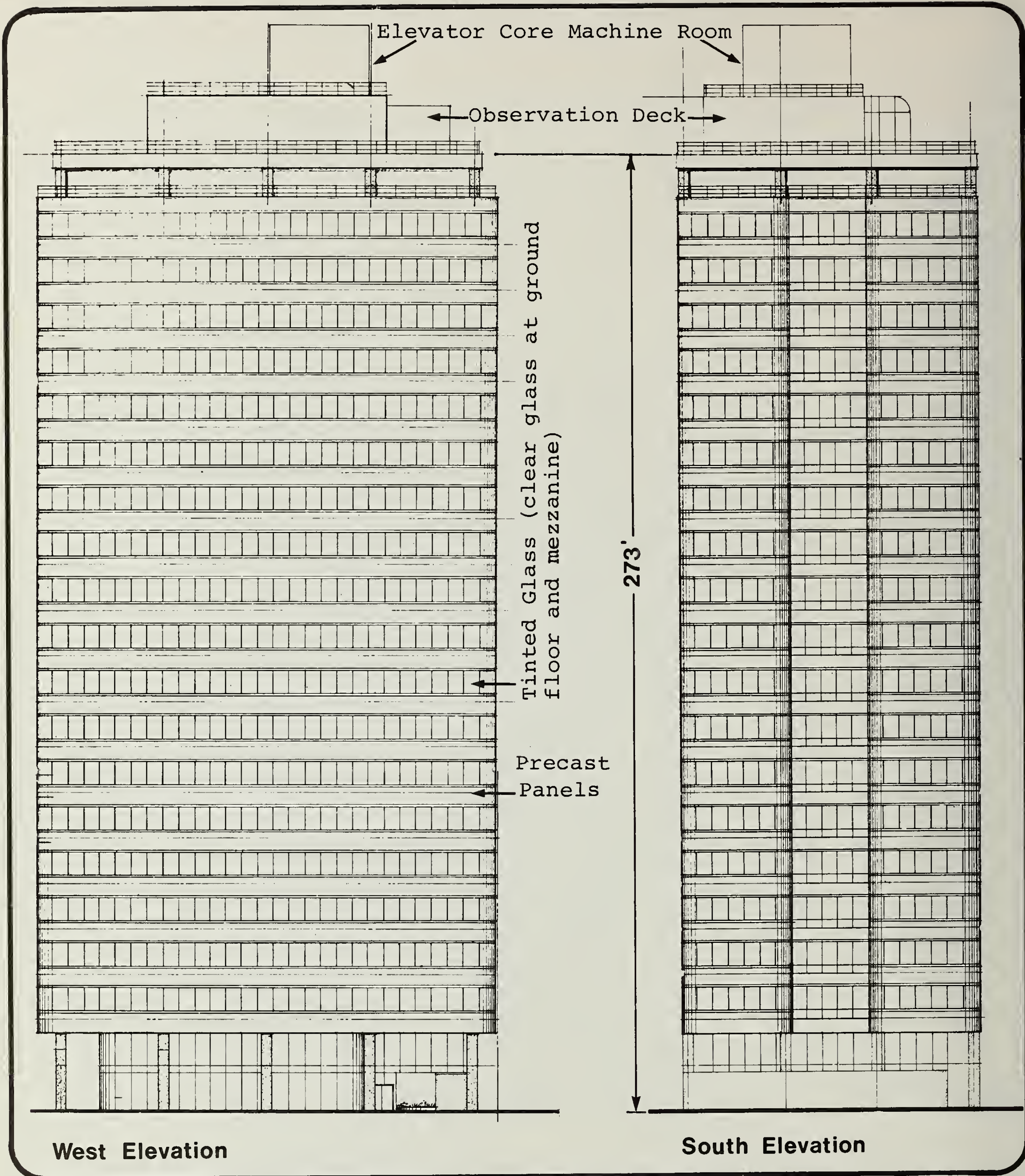
Figure No. 2



Building Elevations

Source: Jorge DeQuesada, Architects

Figure No. 3



Building Elevations

0 15 30 60
Scale Feet

Source: Jorge DeQuesada, Architects

Figure No. 4

an average of about 11,000 gross square feet per floor with a total of about 219,350 gross square feet, excluding elevator shafts, stair wells, and basement area (Figure 6, page 17). Net rentable square feet would be about 181,960.[1] The floor area ratio (FAR) would be 17.4 to 1 (see part D of this Chapter, page 20, Zoning and Required Approvals). The building's main pedestrian entry would face Spear Street and contain a lobby with a building directory adjacent the elevators. A smaller pedestrian entry would orient toward Mission Street while a third pedestrian entry would be oriented toward a pedestrian walkway on the west side of the building (Figure 5, page 16). The pedestrian walkway would extend to the west property line and connect to Mission Street. The walkway is planned to form part of a larger system of walkways through the interior of the block, and join an existing walkway at the south end of the block. It would be expected that portions of the walkway would be completed as new buildings would be constructed on the block.

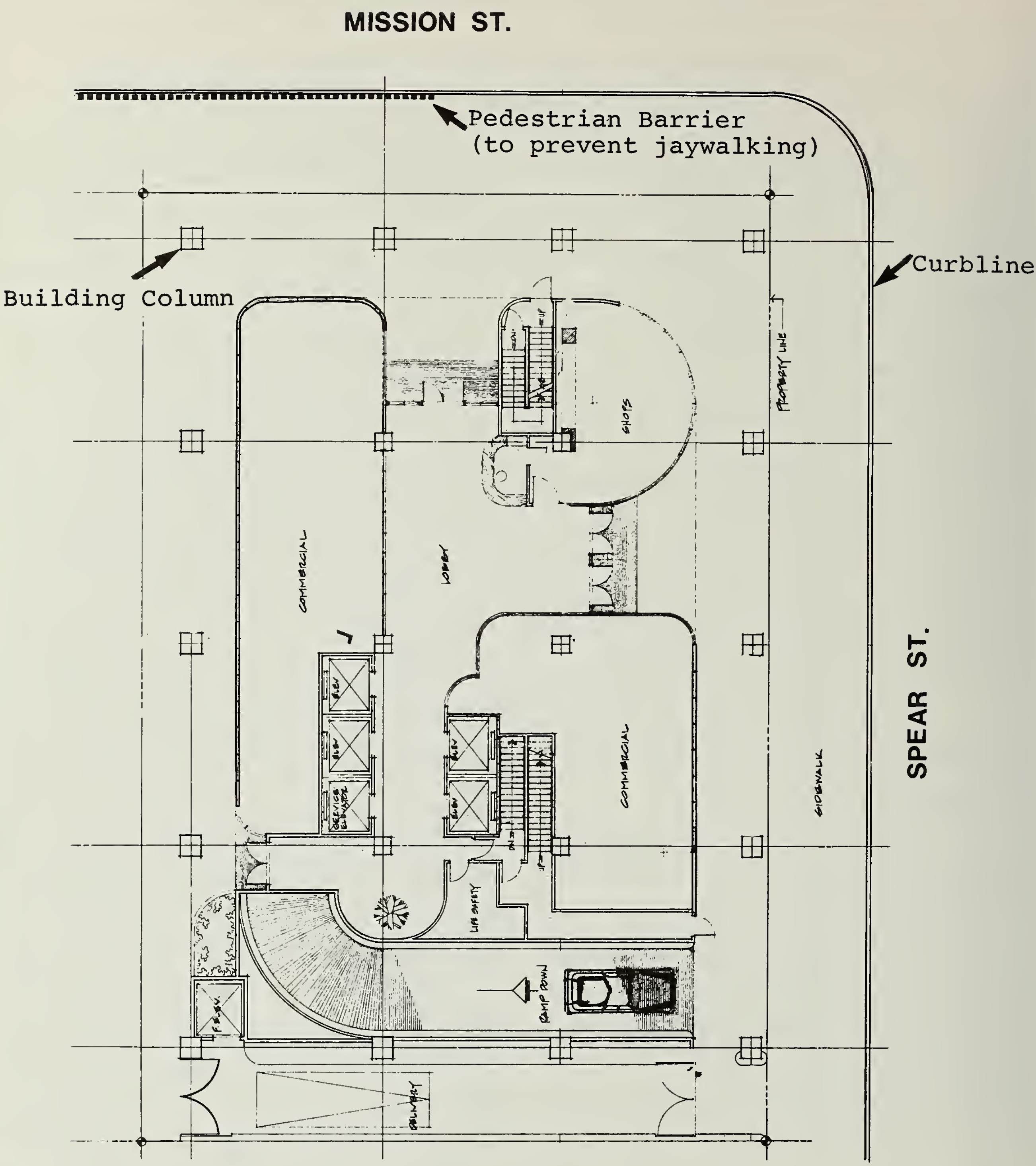
An off-street truck loading stall leading to a freight elevator would be provided adjacent the south property line (Figure 5, page 16).

The project would contain a mezzanine for office use (Figure 7, page 18). The exterior walls of the mezzanine would be flush with the walls of the ground floor, which in addition to the lobby would contain space for retail/commercial uses. Floors 2 through 20 would project outward about 10 feet from the face of the building's lower floors, over a walkway arcade adjacent to the sidewalk (Figure 8, page 19). The combined width of the public sidewalk and the walking area on the project site along Mission Street would be about 33 feet and along Spear Street about 26 feet. The project would provide parking space in the basement for 3 delivery vans, 2 service vehicles and bicycles, with extra space reserved for handicapped and van pool vehicles (Figure 6, page 17).

The building would be constructed using precast concrete panels. Tinted glass would set between the panels held in place

---

[1]Source: Telephone communication, Cathal O'Doherty, project architect, Jorge de Quesada, Inc., Architects, 23 March 1981.



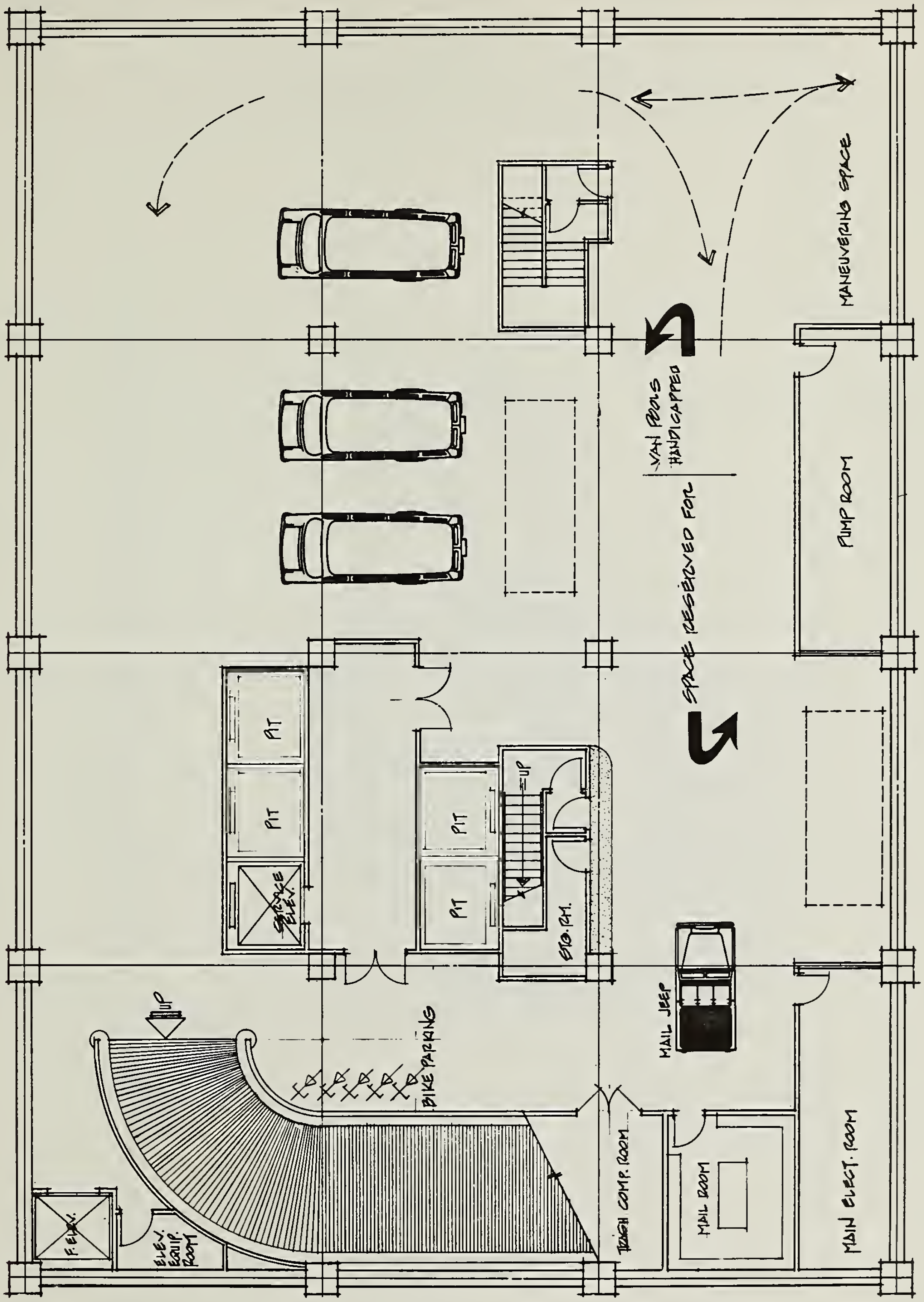
Ground Floor Plan

North

0 5 10 20
Scale Feet

Source: Jorge De Quesada, Architects

Figure No. 5



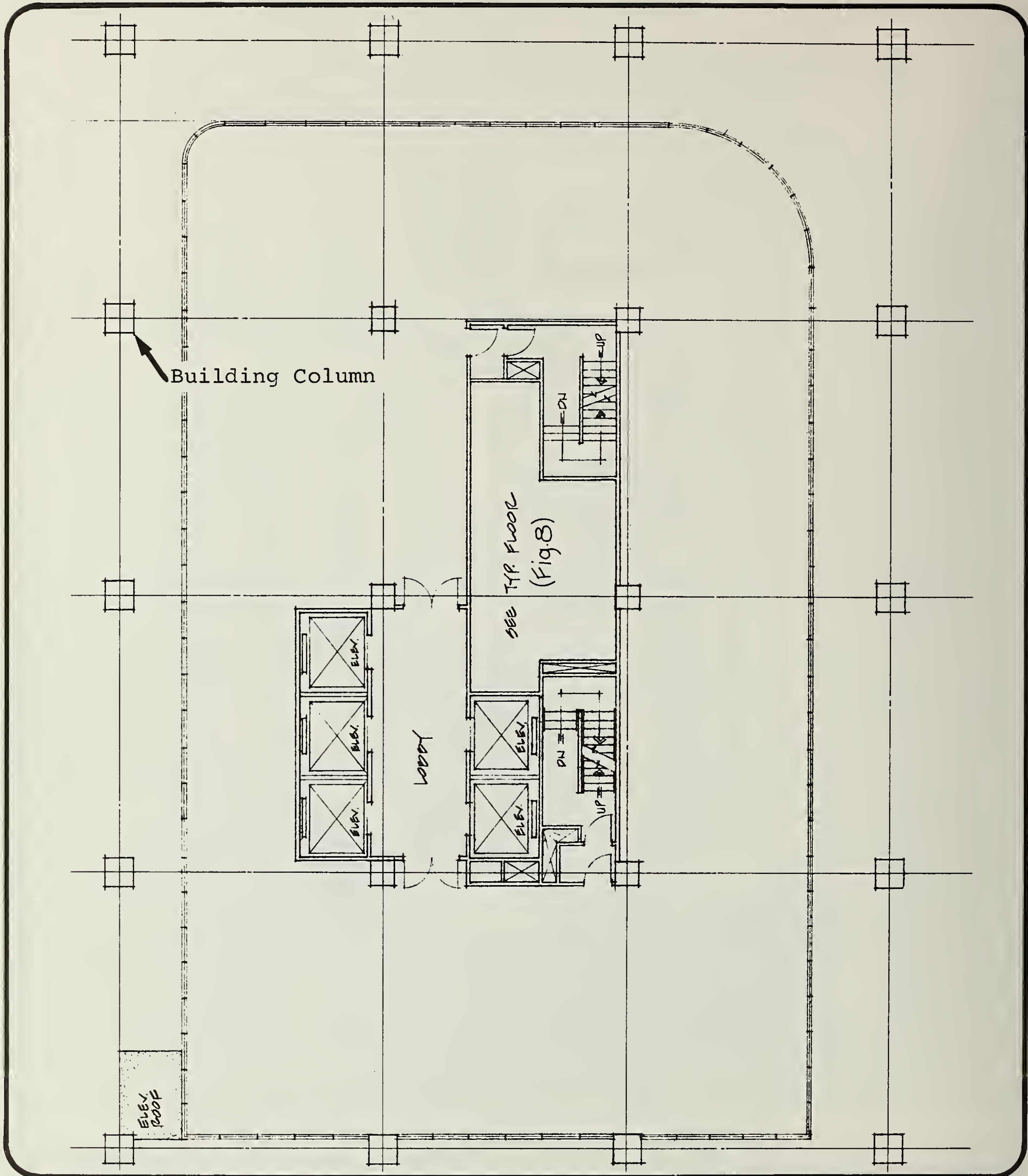
Basement Plan

North

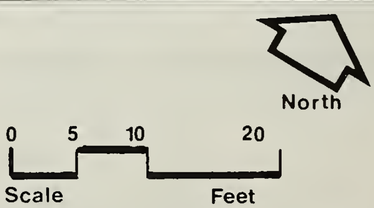
0 5 10 20
Scale Feet

Source: Jorge DeQuesada, Architects

Figure No. 6

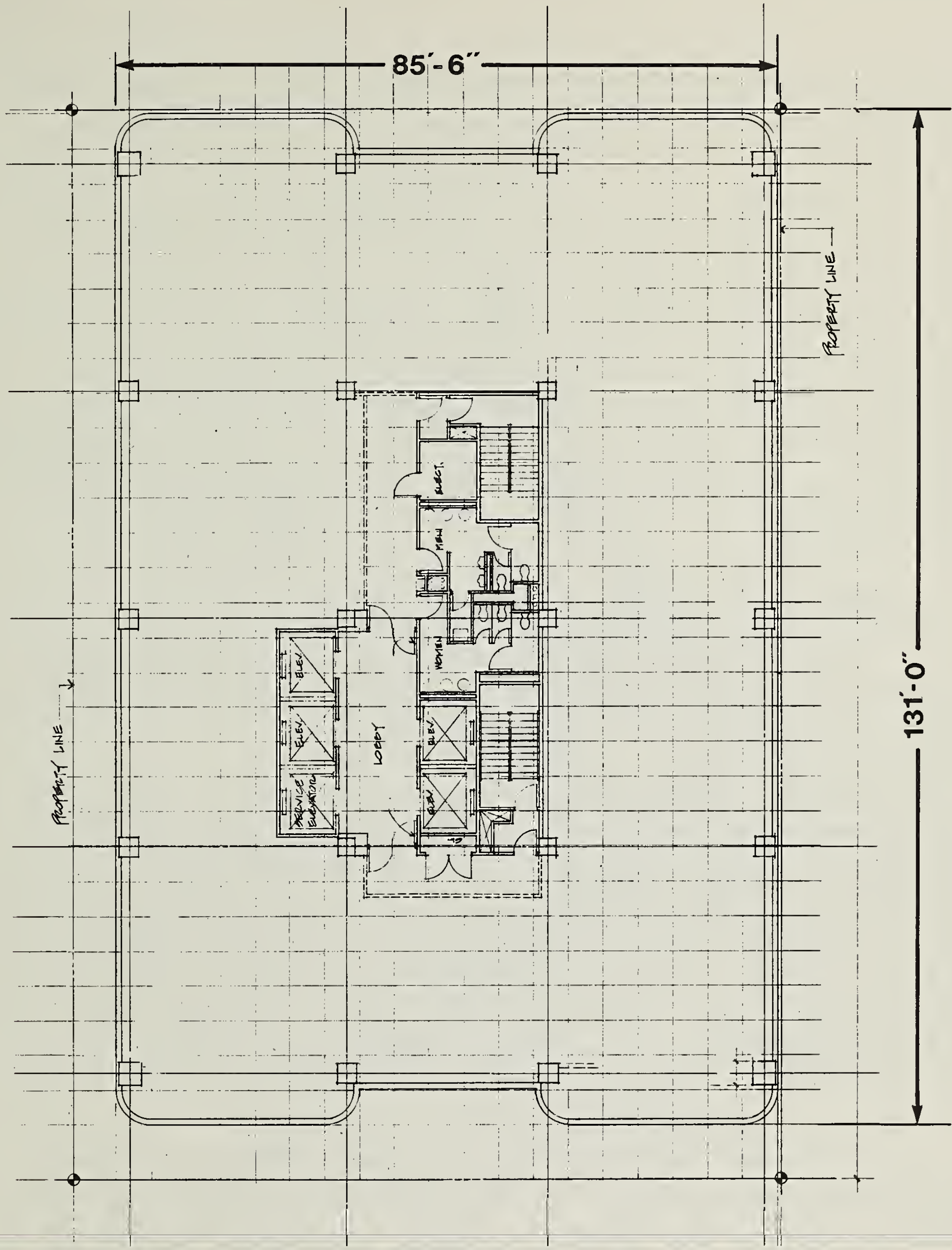


Mezzanine Plan



Source: Jorge DeQuesada, Architects

Figure No. 7



Typical Floor Plan

Source: Jorge De Quesada, Architects

Figure No. 8

by aluminum window frames (see Chapter III.B., Visual Quality and Urban Design, page 58). The corners of the building would be rounded.

Construction of the shell would be expected to cost about $13,161,000 (1981 dollars) with tenant improvements costing about $4,387,000. Construction would be expected to occur over about a 2-year period beginning in late 1981 and completed in late 1983. First tenants would occupy portions of the structure in July or August of 1983 with remaining tenants continuing to move in for the remainder of 1983 and into 1984. Architects for the proposed project are Jorge De Quesada, Inc., with offices in San Francisco.

D. ZONING AND REQUIRED APPROVALS

The site is located in the C-3-0 (Downtown Office) zoning district (Figure 9). This district is described in the Planning Code as follows:

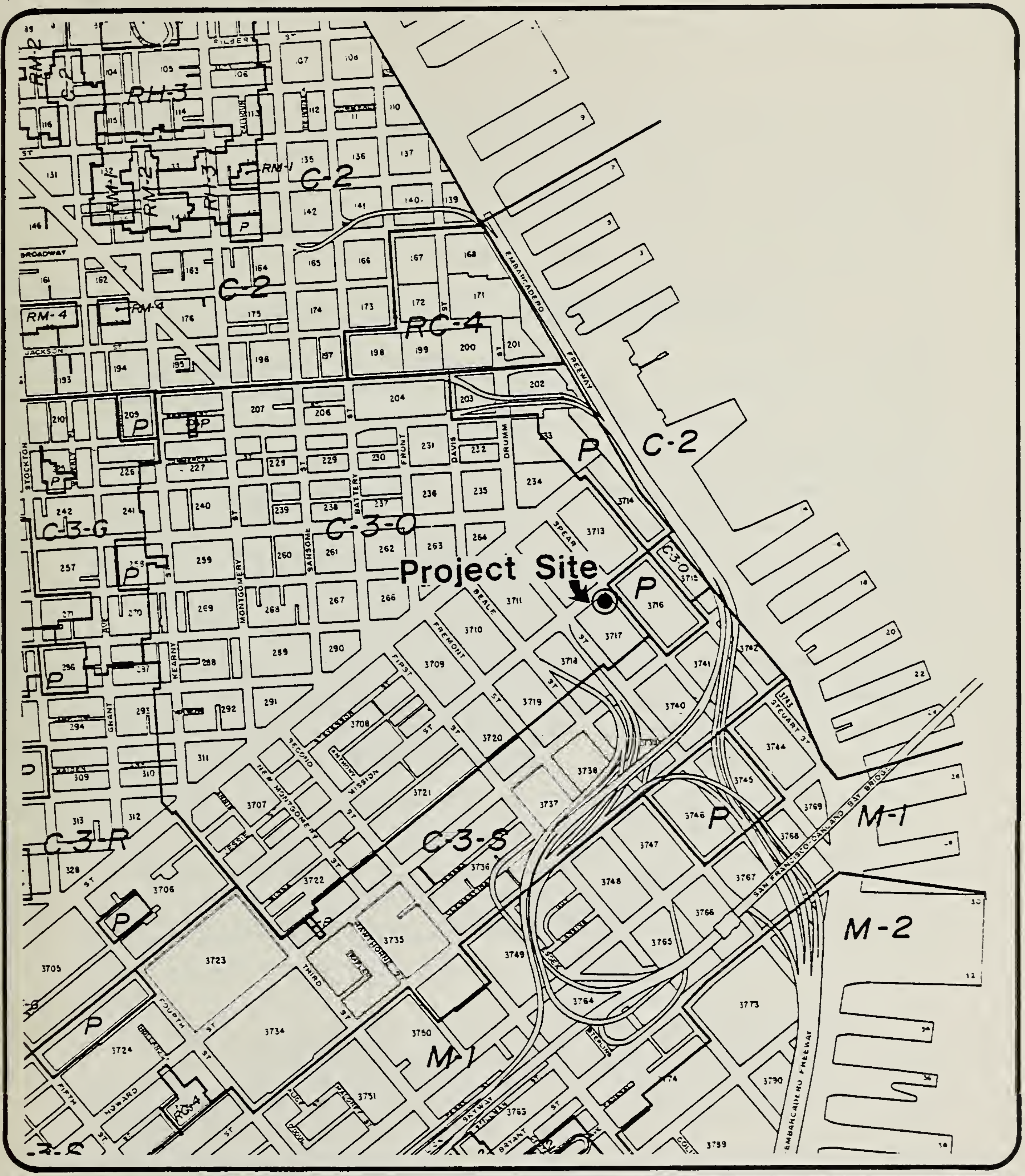
> "The intensity of building development is the greatest in the city, resulting in a notable skyline symbolizing the area's strength and vitality. The district is served by city and regional transit reaching its central portions and by automobile parking at peripheral locations. Intensity and compactness permit face-to-face business contacts to be made conveniently by travel on foot. Office development is supported by some related retail and service uses within the area, with unrelated uses excluded in order to conserve the supply of land in the core and its expansion areas for further development of major office buildings."[1]

In addition to professional and business offices, principal uses in the C-3-0 district include dwellings, group housing, motels and hotels, schools, laundries, places of assembly and entertainment, home and business services, automotive sales and rental and repair garages.

The height and bulk district for the site is 400-I, which allows a maximum building height of 400 feet, with a maximum

---

[1]City and County of San Francisco, City Planning Code, Section 210.3.



Zoning Map

North

0 400 800 1600

Scale Feet

Figure No. 9

building length of 170 feet and a maximum diagonal building dimension on a roofline of 200 feet (above a height of 150 feet). The proposed building would be 273 feet in height, and have a maximum length of 131 feet along Spear Street with a diagonal dimension of about 153 feet. It would therefore conform to the height and bulk requirements.

The basic floor area ratio (FAR) applying to the C-3-0 district is 14:1. Thus, any building on the project site may contain a total gross floor area of up to 14 times the area of the lot.[1] This is exclusive of development bonuses which may be awarded for the addition of such amenities as rapid transit access, multiple building entrances, plazas and setbacks. Requested as bonuses for the project are: multiple building entrances, sidewalk widening and rooftop observation deck (see Section III.B., page 58, Visual Quality and Urban Design). Floor area ratio and bonus calculations for the proposed project are shown in Table 1. The project sponsor specifies that the bonuses are requested for the public convenience that multiple building entrances provide for access/egress to the structure; for reduced restriction to pedestrian flow by providing sidewalk area within the property line on the project site, and for the providing views of the region (see Section III.B. Visual Quality, and Urban Design, page 58), from an observation deck on the structure's top, available to the public.

The proposed project would require Discretionary Review by the City Planning Commission, i.e. a review of the building

---

[1]Details of bonus criteria, their applicability and increase in square footage per bonus are described in Section 126 of the San Francisco City Planning Code. Note that the Board of Supervisors approved interim controls on bonus provisions in the C-3 districts (City Ordinance 240-80, adopted July 1, 1980). While the controls are in effect, bonuses may be permitted only by conditional use authorization and only for hotel and residential purposes. Some seventeen projects, already in the process of environmental or permit review when the controls went into effect, were specifically exempted by previous action of the Board. The proposed project was included in the exemption. Development of the site at a basic FAR of 14:1 is discussed in Chapter VI.B of this report, page 123.

TABLE 1

SQUARE FOOTAGE AND BONUS CALCULATIONS

Site Area	12,604.6	sq. ft.
Basic FAR	14:1	
Basic Allowable Area	176,464.7	sq. ft.
Bonuses requested:		
Multiple building entrances (1 additional entrance claimed)	8,823.5	sq. ft.
Sidewalk widening	24,469.7	sq. ft.
Observation deck	10,000	sq. ft.
Total Gross Area if bonuses allowed	219,758	sq. ft.
Gross Area of Proposed Building	219,350	sq. ft.
Adjusted FAR	17.4:1	

Information supplied by Cathal O'Doherty, Project Architect, written communication, 20 March 1981.

permit application by which the Commission may: 1) approve the project as proposed; 2) approve a project as modified according to conditions; or 3) deny the application. Matters considered would include, but not to be limited to, consideration of

> "protection and enhancement of the pedestrian environment,
> preservation of architecturally and historically significant buildings,
> preservation of housing,
> avoidance of industrial displacement,
> adequate and appropriate means of transportation to and from the project site,
> energy conservation,
> physical relationship of the proposed building to its environs,
> effect on views from public areas and on the city skyline"[1]

---

[1] San Francisco City Planning Commission, Resolution 8474, 17 January 1980. Discretionary Review is to occur for any project which would increase the total amount of building space and activities in the downtown area while the interim bonus controls are in effect.

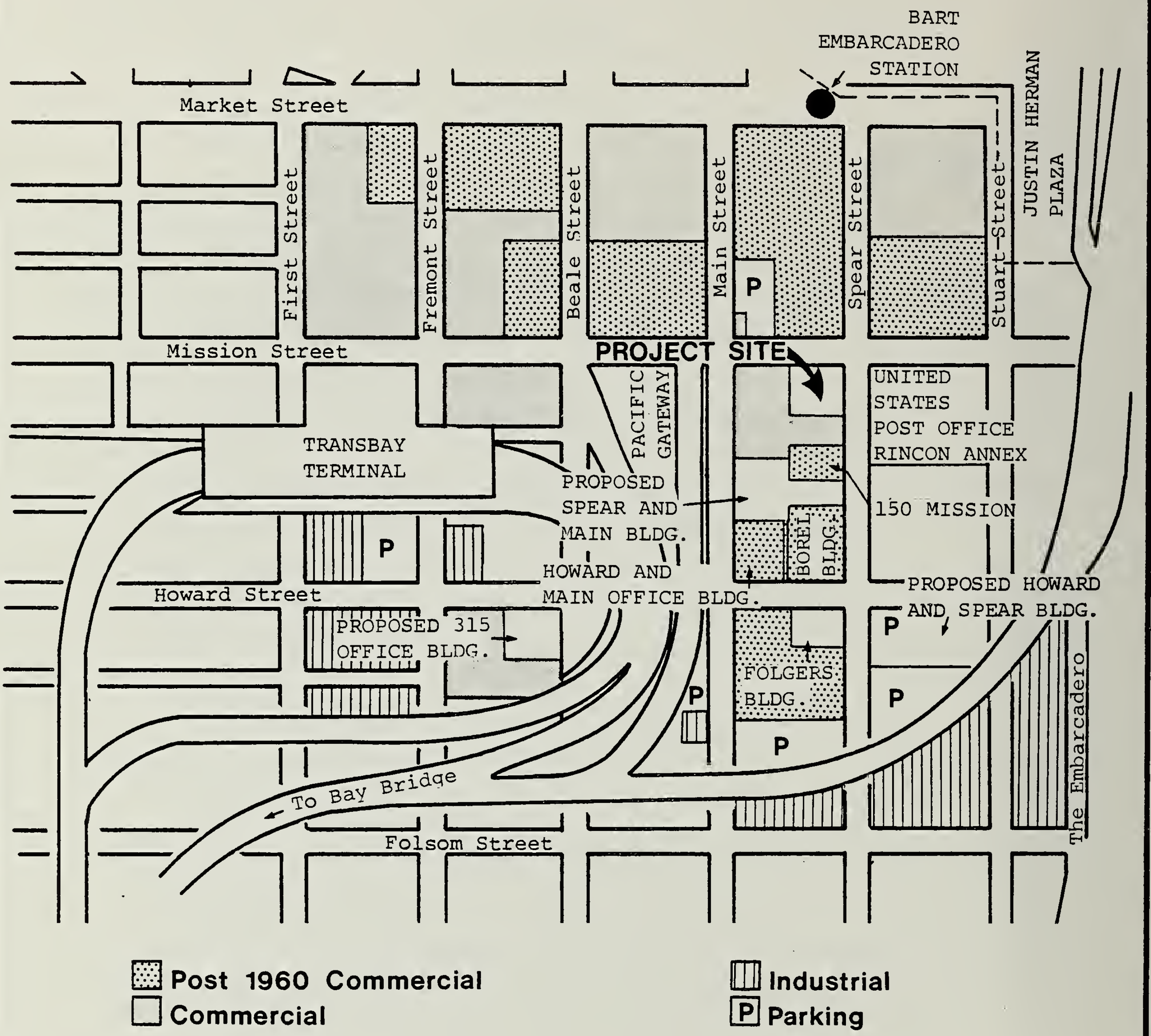
CHAPTER II
ENVIRONMENTAL SETTING

A. LAND USE

The project site is located on the eastern periphery of the central business district in an intermediate location between post-1970 highrise structures and 2-to 3-story commercial/office buildings. This proposed project is indicative of recent land use trends of downtown office development and the conversion of light industrial and warehousing uses to office uses.

The project site is occupied by a 3-story brick building used as a ship chandlery and warehouse. West of the site on the same block are a number of 2-story brick buildings which contain graphics and printing shops, a restaurant, a liquor store and a travel agency. To the east, opposite the site and across Spear Street, is the U.S. Post Office, Rincon Annex (Figure 10).

Current construction in the area includes the 30-story Pacific Gateway office building at the corner of Mission and Main Streets (EE 78.61); the 18 story 150 Spear Street office building (EE 78.413) on the same block as the proposed project; and the Federal Reserve building bounded by Market, Main and Spear Streets (EE 78.207). Proposed structures in the area include the 19-story Spear and Main Street office building (EE 80.349) proposed to be constructed in the middle of the block with frontages on Spear and Main Streets, and the 18-story Howard and Spear Street office building (EE 80.337) which would be located at the southeast corner of the intersection. EIRs are currently being prepared for both of these projects. South of the project site on the same block are the 8-story Howard and Spear office building (Borel building) and the



Land Use Map

North
Not to Scale

Source: Field Check by EIP Corp.

Figure No.10

13-story Howard and Main office building (EE 74.140). West of the site are the 33-story PG&E building and Bechtel building. Other structures immediately north of the project site are One Market Plaza with structures ranging to over 30 stories and the Barclays Bank building.

B. VISUAL QUALITY AND URBAN DESIGN

The proposed project site is in an area south of Market Street that is undergoing change due to recent and current construction (see Figure 11 and Chapter II.A., Land Use, page 25). Although the project area was primarily characterized by pre-1930, 2- to 3-story commercial/office buildings, the site today is urban with most older buildings removed to make way for highrise structures. Vegetation is limited to some street trees and landscaped plazas associated with the highrise buildings.

The 3-story brick building occupying the project site reflects the general character of buildings constructed south of Market Street in the early part of the 20th century (Figure 12a, page 29).[1] Other 2 to 3-story brick buildings on the block contiguous to the project site front Mission Street and are the principal remaining structures typifying early construction in the area. The 5-story Folger Coffee Company building at the intersection of Spear and Howard Streets was renovated during the early 1970s and is currently used as office space; retaining this brick building rather than demolishing it established an architectural style that was partially reflected in the design and use of brick in the Borel building constructed to the north of the intersection (see Figure 12b). Accordingly, some recognition has been given to early building design trends in the area, but the

---

[1]In 1976, the Department of City Planning conducted a City-wide architectural survey which listed 10% of the City's buildings as most architecturally significant. That survey rated the listed buildings by some criteria on a scale of 0 to 5 and other criteria on a scale of -2 to +5. The building on the project site received an "architectural" rating of "0" on a scale of -2 to +5 and a summary rating of "1."

Project Area Photograph
(View north along Main Street. Cross street in foreground is Mission Street.)

Source: EIP Corporation

Figure No. 11

A. View of existing building on project site. Photo taken from north side of Mission Street at Spear Street.

B. View of Borel Building (right) and Howard and Main Office Building.

Project Area Photograph

Figure No. 12

significance of this effort is not accounted for in other highrise construction nearby.

The area is characterized by a mix of older, low profile buildings designed for light industrial land uses and newer, taller structures devoted to office use. Building colors range from red in the use of brick as noted above, to brick that is painted yellow, and the tan and grey of concrete panels on building exteriors constructed near the project site since 1970. The dark grey glass of the 18-story Veterans Administration building located at Howard and Main Streets contrasts with the brick ornamentation and arched windows and entries of the adjacent 5-story Folger Coffee Company building.

At ground level near the project site, views to the north encompass highrise structures that block views toward the skyline profile of buildings of the Financial District. Views to the west are largely confined to the alignment of Mission Street due to the buildings that front the street. Views to the east take in the Rincon Annex Post Office building containing "modernist" design principles popular at the time of its construction (see Section II.J. Historical) that called for smooth building surfaces, painted detailing and the use of "modern" materials such as aluminum, glass block and concealed lighting. The building received an "architectural" rating of "3" and a summary rating of "4" in the 1976 Department of City Planning architectural survey (see footnote on page 27). Views beyond the Rincon Annex eastward are terminated by the elevated levels of the Embarcadero Freeway along the waterfront.

C. TRANSPORTATION

Transportation characteristics in the vicinity of the proposed project site are related to traffic accessibility and flow, transit routing and patronage, pedestrian accessibility and flow, and parking supply and use.

1. <u>Street System</u>

The project site generally has freeway accessibility to/from the East Bay and Peninsula. The most direct freeway access is at the on and off-ramps at the Mission/Beale and Mission/Main intersections. These ramps provide travel links to/from both the Peninsula and East Bay. Additional ramps are available along Fremont and Harrison Streets. Automobile accessibility to/from the north bay is less direct and therefore subject to a more dispersed travel pattern. The most likely options for north bay travel are via The Embarcadero (to Broadway, Bay, etc.) or via Interstate 80 to U.S. Highway 101 (Figure 13).

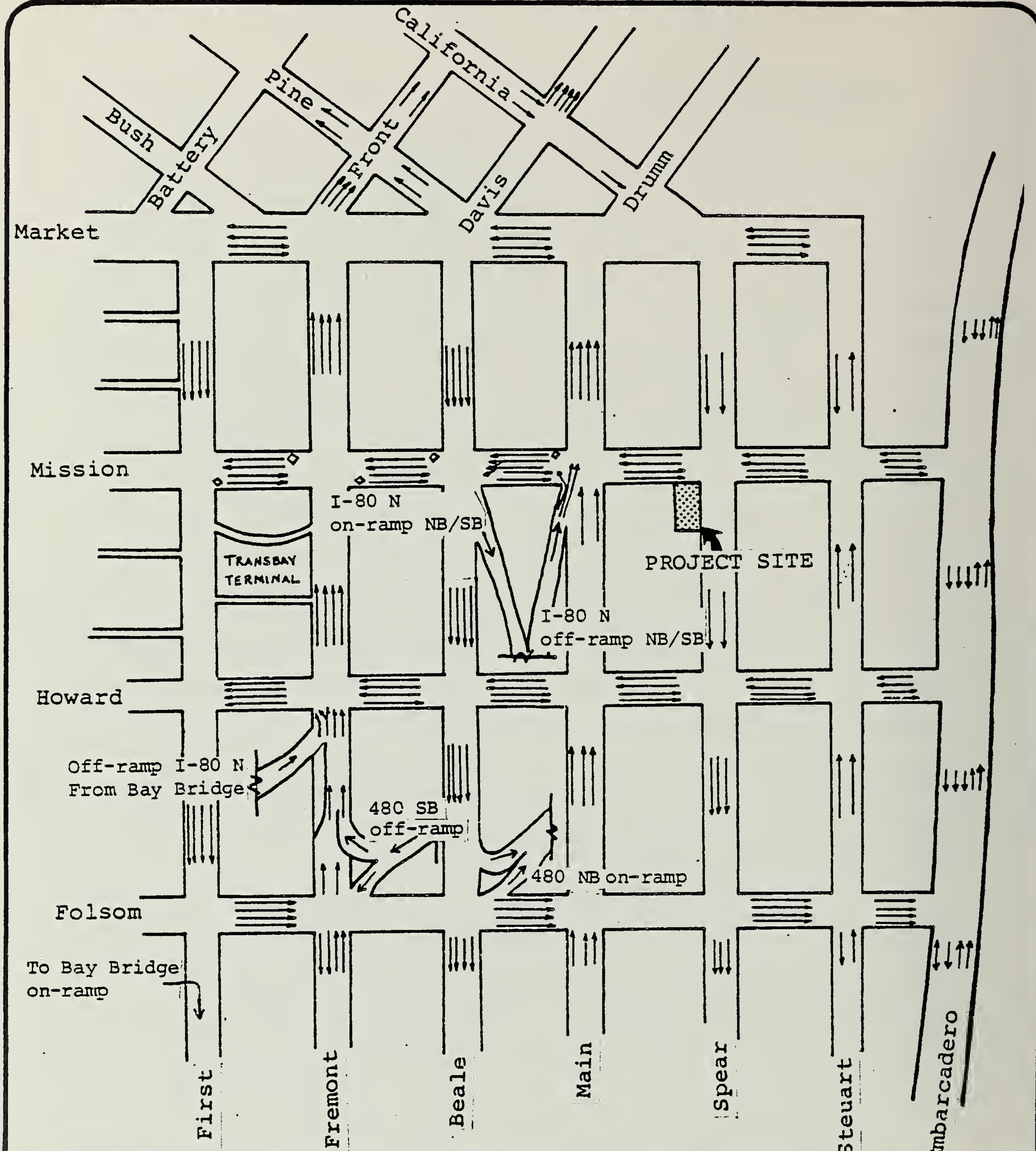
The local street network is characterized by the major east/west routes of Market, Mission, Howard and Folsom Streets and the major north/south access routes of Fremont, Beale and Main Streets and The Embarcadero. The Transportation Element of the San Francisco Comprehensive Plan designates Market, Howard, Folsom, Beale, Main and Steuart Streets and The Embarcadero as major thoroughfares.[1]

The Transportation Element also designates Market, Mission, Fremont and First Streets as "Transit Preferential Streets." By definition, priority is given to transit vehicles over automobiles on these streets.

Existing traffic volumes in the vicinity of the project site are depicted in Table 2. In general, stable traffic flow conditions can be maintained on two-lane roadways carrying 10,000-12,000 daily vehicles. Within these criteria, the roadways listed in Table 2 are experiencing stable traffic flow. A more specific analysis of traffic flow quality examines the

---

[1]Major thoroughfare is defined as ". . . a cross-town thoroughfare whose primary function is to link districts within the City and to distribute traffic from and to the freeways, a route generally of city-wide significance . . ."



Source: EIP Corporation

Street Network

Legend:

◇ Diamond Lane: Buses and Right Turns Only, 7am to 6pm
NB = Northbound
SB = Southbound
——→ = Traffic Lane

North
Not to Scale

Figure No. 13

peak traffic flow at signalized intersections. Peak hour turning movement counts have been obtained[1] for three key intersections near the project site: Mission/Beale, Mission/Main and Mission/Spear. Using a "critical movement analysis"[2] the service levels of the intersection have been calculated as follows: (see Appendix A, page 139 for service level definitions).

. <u>Service Levels</u>

Mission/Spear	(p.m. peak hour)	- Service Level A
Mission/Main	(a.m. peak hour)	- Service Level B
Mission/Beale	(p.m. peak hour)	- Service Level C

While these service levels indicate stable traffic flow conditions, the downtown freeway network is the actual constraint on vehicle access. The Interstate 80 freeway is currently operating at jammed conditions (typified by Service Level F) during the evening peak hour.[3] Thus, the overall congestion on the freeway can affect the flow on specific freeway links or individual ramps.

---

[1]Counts at Mission/Main and Mission/Beale conducted by Traffic Engineering Division, San Francisco Department of Public Works on 30 April 1981 and 2 February 1981 respectively. Counts at Mission/Spear conducted on 16 July 1980 as a part of this Draft Environmental Impact Report.

[2]"Critical Movement Analysis" described in Circular No. 212, Transportation Research Board, January 1980.

[3]San Francisco Department of City Planning, <u>Final Environmental Impact Report, Pacific Gateway Office Building Project-EE78.61</u>, certified 26 July 1979.

Table 2

Existing Traffic Volumes

Street Segment	Daily Traffic (Date of Count)	P.M. Peak Hour Traffic (Date of Count)
- Spear Street (north of Howard)	4,691* (Jan. 1978)	428* (Jan. 1978)
- Howard Street (at Spear)		
Eastbound	2,753*	302*
Westbound	5,044 (Jan. 1978)	604 (Jan. 1978)
- Howard Street (east of Beale)		
Eastbound	N/A	100**
Westbound	N/A	1,090 (April 12, 1979)
- Beale Street (north of Howard)	N/A	570** (April 12, 1979)

*Counts conducted by Traffic Engineering Division, San Francisco Department of Public Works.

**Counts conducted as a part of FEIR 315 Howard Street Office Building, EE 79.196, Certified 21 August, 1980.

2. Transit

Transit routes in the vicinity of the project site are depicted on Figure 14, page 36. Local routes are provided by the San Francisco Municipal Railway (MUNI) and regional service is available via BART, A.C. Transit (AC), Golden Gate Transit (GGT), San Mateo County Transit (SamTrans), Greyhound, and Southern Pacific (SP).

San Francisco Municipal Railway. Muni operates 27 routes within walking distance (2,000 feet) of the project site (Table 3).

City staff have provided patronage statistics for all downtown routes, projected to 1983. The projections include existing patronage as well as projected patronage attributed to other committed development in the downtown area. In Table 4, the p.m. peak hour patronage capacity and load factors are shown for the relevant lines. A number of lines will operate over capacity in 1983. Because capacity is based upon 150% of the available seats, any load factor over 1.00 reflects extremely crowded conditions.

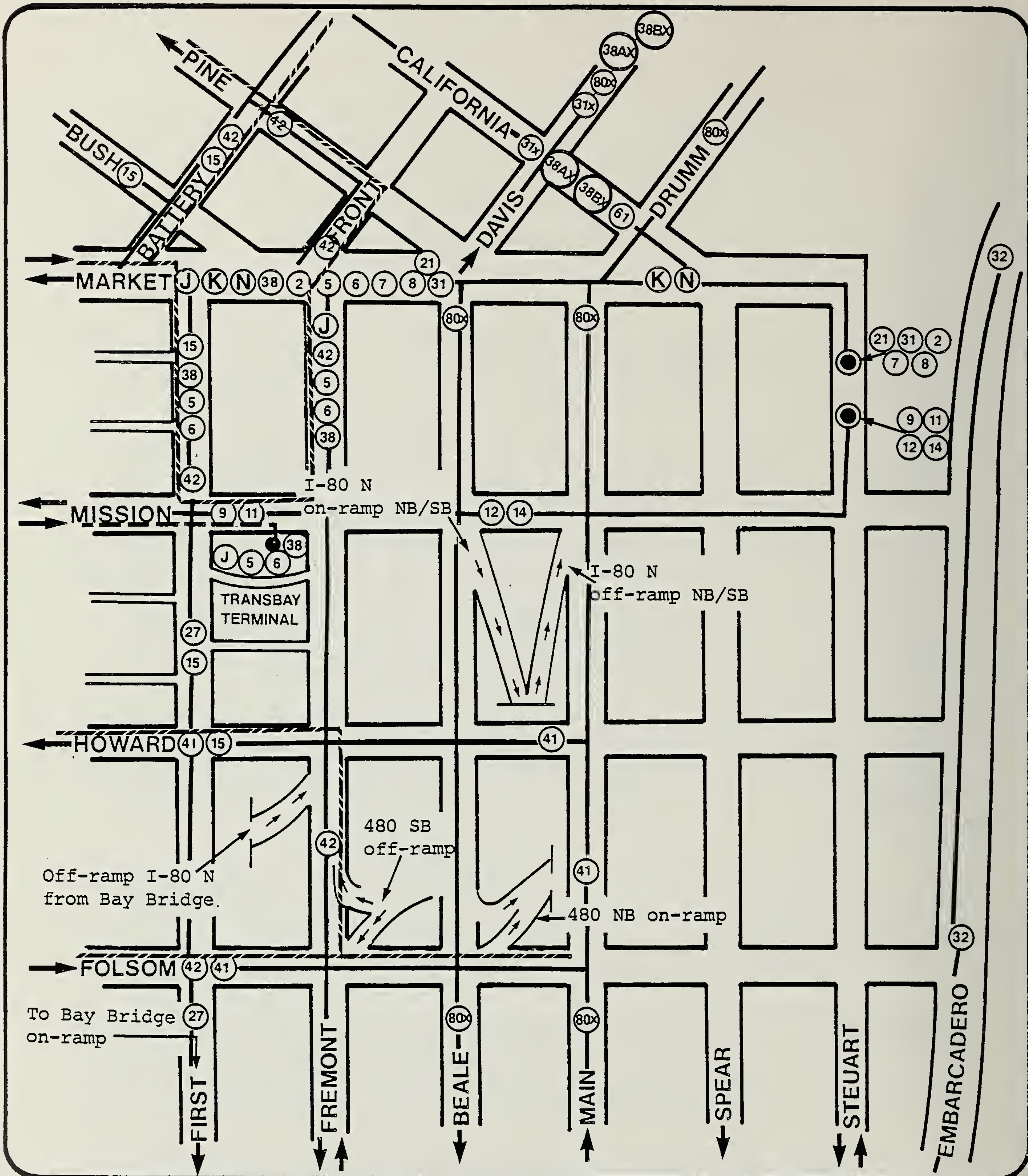
BART. BART staff[1] have provided the following p.m. peak hour operating statistics for outbound trains at their peak load points:

	East Bay	Daly City
Seats	9,000	6,400
Passengers	11,646	6,408
Average load factor	1.29	1.00

With heavier ridership during portions of the peak hour, certain peak trains experience load factors which are approximately 10% higher.

---

[1]John Stamas, BART Planning Staff, personal communication, 5 February 1981.



Transit Routes

(15)	MUNI Routes
	SamTrans Routes
	Golden Gate Routes

North
Not to Scale

Figure No. 14

TABLE 3

MUNI Service Summary

ROUTE DESIGNATION	
1 - California	Service linking downtown with Western Addition and Richmond
1X - California Express	Service linking downtown with Richmond, weekday peak hour only
2 - Clement	Service linking downtown with Western Addition and Richmond
3 - Jackson	Service linking downtown with Pacific Heights and Western Addition
4 - Sutter	Service linking downtown with Western Addition, peak hour only
5 - Fulton	Service linking downtown (and Transbay Terminal) with Richmond
6 - Parnassus	Service linking downtown (and Transbay Terminal) with Sunset
7 - Haight	Service linking downtown with Haight-Ashbury, weekdays only
8 - Market	Service linking downtown with Castro/Market
9 - Richland	Weekday service linking downtown with Mission and Bernal Heights
11 - Hoffman	Service linking downtown with upper Market
12 - Ocean	Service linking downtown with outer Mission and City College
14 - Mission	Service linking downtown with Mission outer Mission, and Daly City
14L & 14X - Mission	Express and limited-stop service linking downtown with outer Mission and Daly City
15 - Third	Service linking Wharf, downtown, Bayview and City College

TABLE 3
(continued)

21 - Hayes	Service linking downtown with Richmond
27 - Noe	Service linking downtown with Mission and upper Noe Valley
31 - Balboa	Service linking downtown with Richmond
32 - Embarcadero	Daytime service linking downtown and South of Market with Aquatic Park
38 - Geary	Service linking downtown with Western Addition and Richmond
38L, 38AX and 38BX - Geary	Express and limited-stop service linking downtown with Richmond
41 - Union	Service linking downtown with Western Addition
61	California Cable Car
80 - Commuter Gateway	Service linking Gateway Center with downtown and S.P. Depot
J,K,L,M and N MUNI METRO	Light-rail service linking downtown with upper Noe, Sunset, Parkside and Ingleside districts

TABLE 4

PROJECTED 1983 MUNI PATRONAGE[1]
P.M. PEAK HOUR - OUTBOUND DIRECTION

(Includes existing patronage plus projected ridership from approved downtown development to be occupied by 1983)

LINE	CAPACITY[2]	PATRONAGE	PROJECTED LOAD FACTOR[3]
1	450	499	1.11
1X	750	766	1.02
2	600	716	1.19
3	525	638	1.21
4	375	294	.79
5	1,275	1,233	.97
6	675	627	.92
7	450	410	.91
8	1,125	823	.73
9	750	663	.88
11	750	844	1.13
12	525	609	1.16
14	1,275	1,521	1.19
14GL	300	317	1.06
14X	675	819	1.21
15	975	1,108	1.14
21	825	827	1.00
27	300	196	.65
31	525	626	1.19
32	1,050	520	.50
38	1,125	1,236	1.10
38L	675	819	1.21
38AX	600	631	1.05
38BX	300	242	.81
40X	525	403	.77
55	1,650	1,821	1.10
66	375	232	.62
80X	600	542	.90
J	1,235	998	.81
K	3,900	3,901	1,00
N	2,400	2,565	1,07

[1]Statistics are not available for all of the routes listed in Table 3. Load factors shown are for the peak hour - certain peak runs may actually have higher load factors.

Source: Guidelines for Environmental Evaluation - Transportation Impacts," San Francisco Department of City Planning, 3 July 1980 (revised 13 November 1980).

[2]Capacity = 150% of available seats.

[3]Load Factor = Ration of Patronage to Capacity.

AC Transit.[1] AC Transit operates approximately 200 buses outbound from the Transbay Terminal during the p.m. peak hour. Based on a capacity of 125% of vehicle seating (AC policy accepts 25% standees) and an average of 50 seats per bus, a total capacity of 12,500 passengers is available. With a current peak hour patronage of 9,000 during this peak hour, the overall capacity reserve is 3,500. However, certain peak runs have higher load factors and therefore little excess capacity.

Golden Gate Transit.[2] Golden Gate Transit currently operates 147 buses out of the downtown area during the afternoon peak hour, about 120 buses on the financial district routes and 27 buses on the Civic Center routes. On the average, these buses run at their design capacity level as set by Golden Gate policy, i.e., at seating capacity. Golden Gate Transit allows a maximum (crush) capacity of 55 passengers per bus, corresponding to 10 standees which equates to 8,085 peak hour riders. Current peak-hour ridership out of downtown is estimated at 6,620 passengers. On certain peak runs, more than 10 standees may be present.

SamTrans and Southern Pacific.[3] There are currently 12 SamTrans buses leaving the downtown area during the afternoon peak hour. They operate at about 90% of seating capacity, corresponding to peak-hour ridership of about 510 passengers. Assuming a maximum capacity of 125% of available seats, it is estimated that there is a reserve capacity for 240 passengers.

---

[1]Gene Gardner, AC Planning Staff, telephone communication, 27 March 1981 .

[2]Alan Zahradnik, Golden Gate Transit Planning Staff, telephone communication, 27 March 1981.

[3]SamTrans data based on telephone communication with Larry Stueck, SamTrans staff, 27 March 1981. Southern Pacific data based on telephone conversation with John Lai CalTrans staff, 27 March 1981.

The SP commute service has recently (July 1980) been incorporated into an operating agreement bwtween the railroad and the State of California (through CalTrans). Current service provides 11 southbound trains with 9,000 seats during the p.m. peak hour. The current load factor (based upon one seat per passenger) is 0.83, or approximately 7,470 passengers.

3. Parking

The proposed project site is within the "Downtown Core Automobile Control Area" as designated in the San Francisco Master Plan.[1] Essentially, the goal for this area is to limit parking and thereby reduce the intrusion of automobile travel. South of the proposed site is a parking belt area, also designated in the City's Master Plan. This belt is defined as an area "within the Downtown Commercial District which may be appropriate for new short-term parking facilities subject to criteria of the Citywide Parking Plan." The belt currently includes a number of surface parking lots and a structure which are used for short-term and long-term (greater than 6 hours) employee parking. Numerous other surface lots are available adjacent to and beneath the Interstate 80 freeway.

A mid-1980 parking occupancy study in this area was conducted as part of the 5 Fremont Center project (EE80.268).[2] Surveys were conducted in the area bounded by The Embarcadero, Harrison, Third, Kearny, and Washington Streets. Within this area a total

---

[1]City of San Francisco, "Revisions to the Transportation Element of the Master Plan Regarding Parking," 20 January 1977.

[2]San Francisco Department of City Planning, Final Environmental Impact Report, 5 Fremont Center, EE 80.268, certified 12 March 1981.

of 15,020 off-street spaces are available and the average occupancy is approximately 89%. Two other recent EIR documents contained similar parking inventory and occupancy surveys in the same basic area south of Market Street. In the EIR for the Pacific Gateway Office Building Project,[1] off-street spaces had an occupancy rate of 90-100%, while on-street spaces had an occupancy rate of 85-95%. The FEIR for the 315 Howard project[2] found 90% occupancy rates for both the off-street and on-street spaces surveyed. These surveys indicate that on- and off-street parking is near capacity during the day.

On-street truck loading zones are available (immediately adjacent to the project site) on Mission and Spear Streets. During midday and p.m. peak hour observations,[3] only one of these loading zones was occupied and that occupancy was related to the existing commercial use of the project site. During the a.m. peak period, truck activity is more concentrated and delivery vehicles occupied all the adjacent loading zones. On the east side of Spear Street, south of Market Street, a loading zone exists adjacent to the Rincon Annex postal facility. However, this zone is apparently subject to unrestricted parking by private automobiles.[4] One hour parking meters are located along the south curbline of Mission Street, west of the project's west property line.

4. Pedestrian and Bicycle Access

Pedestrian Conditions. Pedestrian volumes on adjacent sidewalks and crosswalks were counted during both the midday (11:30 a.m. - 1:30 p.m.) and evening (4:00 p.m. - 6:00 p.m.) peak

---

[1]San Francisco Department of City Planning, Final Environmental Impact Report, Pacific Gateway Office Building Project (EE78.61), certified 26 July 1979.

[2]San Francisco Department of City Planning, Final Environmental Impact Report, 315 Howard Street Office Building, (EE79.196), certified 21 August 1980.

[3]Field Observations conducted by EIP on 15 and 16 July 1980.

[4]Ibid.

periods. The physical conditions, average flows during these periods, and peak 15-minute flow rates are depicted in Figure 15.

An accepted methodology for describing pedestrian flow quality is contained in Urban Space for Pedestrians by Pushkarev and Zupan.[1] They cite the following characteristics of pedestrian flow:

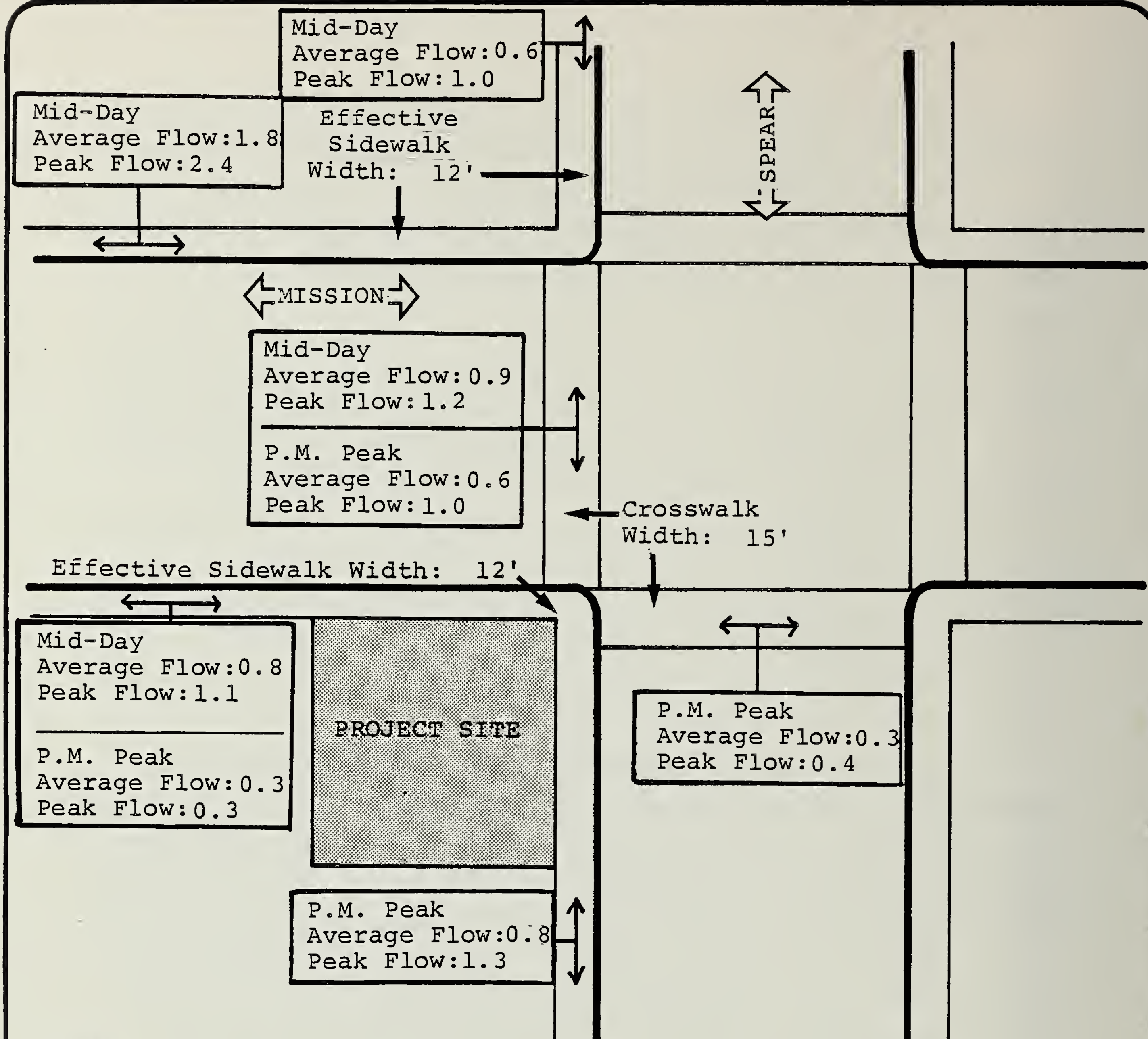
Description	Flow Rate (persons/minute/foot of walkway width)
Open	less than 0.5
Unimpeded	0.5-2
Impeded	2-6
Constrained	6-10
Crowded	10-14
Congested	14+

Even during the peak 15 minute periods, none of the sidewalks or crosswalks would experience worse than impeded flow. The cited reference also suggests that the "platooning" effect (groups of pedestrians) on pedestrian flows can cause more congested conditions during certain peak periods and that a rate of 4 persons/minute should be added to simulate this platooning. However, even this adjustment would allow the flows to remain within the Impeded category.

Bicycle Conditions. In the vicinity of the project site, the City's Master Plan has designated Market Street, Spear Street and The Embarcadero (from Spear to Berry) as bicycle routes.

---

[1]Pushkarev and Zupan, Urban Space for Pedestrian, MIT Press, 1975.



Note:
Flow rates are persons/minute/foot of walkway width.

1. Average Flow is the average one minute flow rate during the entire 11:30 a.m. - 1:30 p.m. period and/or the 4:00 p.m. - 6:00 p.m. period.

2. Peak Flow is the average one minute flow rate during the peak 15 minute period within the 11:30 a.m. - 1:30 p.m. period and/or the 4:00 p.m. - 6:00 p.m. period

Existing Pedestrian Flows

Not to Scale

⟷ Indicates pedestrian movement

Source: Field Observations by EIP Corporation

Figure No. 15

D. NOISE

The noise environment at 101 Mission Street is dominated by traffic on Mission and Spear Streets. To quantify the noise environment at the project site, noise measurements were made on Wednesday, 16 July 1980 between 4:30 and 5:30 p.m. at (1) the north side of Mission Street opposite the project site and (2) the west side of Spear Street at the project site.

Measurement position 1 was located 15 feet from the edge of pavement of Mission Street and about 25 feet from edge of pavement of Spear Street. The diesel buses on Mission Street generated the highest levels with instantaneous maximums during the bus passbys ranging from 77-86 dBA.[1] A squealing brake generated 92 dBA. Between 4:50 and 5:00 p.m. the Leq was 75 dBA.

Measurement position 2 was located 150 feet south of Mission Street on Spear Street, 35 feet west of the Spear Street centerline. The major noise sources were mail trucks entering and leaving Rincon Annex. The trucks generated instantaneous maximum sound levels of 76-83 dBA as they passed the measurement location. Bus and automobile traffic on Mission Street also contributed to the noise environment along Spear Street. Between 5:10 and 5:20 p.m. the Leq was 69 dBA.

The Transportation Noise Section of the Environmental Protection Element of the Comprehensive Plan of the City and County of San Francisco contains thoroughfare noise levels for the year 1974 (which represents existing levels). The noise levels in this document are in terms of Ldn. The Ldn along

---

[1]The decibel (dB) as used in this report is the unit of sound level referenced to the sound pressure corresponding to the threshold of hearing. The A-weighted decibel (dBA) accounts for how the human ear responds to sounds of different frequencies. The equivalent sound level (Leq) is the steady A-weighted level which would generate the same acoustic energy as the time-varying environmental noise. The day-night average sound level (Ldn) is a twenty-four hour average with 10 dBA added to the levels between 10 p.m. and 7 a.m. Refer to Appendix B, page 143, for a discussion of the Fundamental Concepts of Environmental Noise.

Mission Street at Spear Street is shown to be 75 dBA. The Spear Street Ldn is not given. Analysis for the 101 Mission Street Building corroborates the Mission Street Ldn since the peak-hour Leq is typically about equal to the Ldn. Based on the measured data, the Ldn along Spear Street adjacent to the project site is calculated to be about 70 dBA.

E. CLIMATE AND AIR QUALITY

1. Climate

The climate of San Francisco is dominated by the breezes characteristic of marine climate. Because of the steady stream of marine air, there are few extremes of heat and cold. Temperatures exceed 90 degrees on an average of one day a year and drop below freezing on an average of less than once a year. The warmest month is September, with an average daily maximum of 68° F.

Winds in San Francisco are generally from a westerly direction and are persistent from May to August. During the rainy season (October to April), however, the strongest winds flow from the south as well as from the west and northwest.

Wind tunnel tests of the proposed site as it exists (see Appendix C, page 149) show the site to have low winds for the westerly and northwesterly wind directions. The site is downwind of the financial district and is sheltered by the upwind highrise buildings.

2. Air Quality

San Francisco's persistent summer winds and its upwind position in relation to major pollutant sources give it possibly the cleanest air in the Bay Area. Despite these advantages, there are periods, most often in fall and winter, when the air becomes stagnant. At these times the entire Bay Area has poor air quality.

The prevailing wind pattern in the Bay Area results in a deterioration of air quality east and south of San

Francisco. Table 5 shows that areas downwind of San Francisco have more severe air quality problems. The main San Francisco monitoring site is at the Bay Area Air Quality Management District offices at 936 Ellis Street, about 1½ miles west of the project site.

The data in Table 5 are representative of the project site with the exception of carbon monoxide, which is strongly influenced by local traffic levels. While San Francisco's air quality is better than most locations in the Bay Area, state and federal standards are not met in the Bay Area (see Table 5). This has resulted in the development of an Air Quality Plan for the Bay Area, as part of the Environmental Management Plan (EMP) prepared by the Association of Bay Area Governments (ABAG) and other governmental agencies.[1]

The 1979 Air Quality Plan contains a strategy for the long-term attainment and maintenance of the air quality standards. The plan includes measures to reduce emissions from stationary sources and automobiles, and proposed transportation measures designed to reduce automobile emissions. The air quality problems addressed in the plan are photochemical oxidants, carbon monoxide, and suspended particulates.

F. SOILS AND SEISMICITY

1. Soils

The site is underlain by fill, in descending order, by soft Upper Bay mud, Lower Bay mud with interbedded sand and gravel, alluvium and Franciscan bedrock.[2] The fill is approximately 20 feet thick and contains bricks, wood and

---

[1]Association of Bay Area Governments, 1979 Bay Area Air Quality Plan, January 1979.

[2]Lee and Praszker, "Geotechnical Input for EIR on 101 Mission Street, San Francisco," July 1980.

TABLE 5

Number of Days Selected Pollutants Exceeded State or Federal Standards, 1980[1]

Monitoring Site	Ozone[2]	Nitrogen Dioxide	Carbon Monoxide	Suspended Parti- culates	Sulfur Dioxide
San Francisco (Ellis Street)	0.0	0	0	6	0
Redwood City	0.8	0	0	1	0
San Jose	6.2	1	15	15	0
San Rafael	0.7	0	0	1	0
Fremont	5.6	0	0	8	0
Livermore	2.2	0	-	9	0

Source: Bay Area Air Quality Management District, Air Currents, Vol. 24, No. 3, March 1981.

---

[1] The State standards are specific concentrations and durations of air pollutants that reflect the relationship between concentration and undesirable effects. They are target values, and no timetable exists for their attainment. The Federal primary standards represent levels of air quality necessary for protection of public health, with an adequate margin of safety. The provisions of the Clean Air Act as amended require that by December 31, 1987 the Federal standards should not be exceeded.

[2] In early 1979 the U.S. Environmental Protection Agency adopted a new oxidant standard. The previous standard of 0.08 parts per million for all oxidizing substances was replaced by a standard of 0.12 parts per million for ozone alone, the most prevalent oxidant. The new Federal standard is based on a 3-year average, known as the Expected Annual Exceedance (EAE). An EAE of 1.0 is considered as compliance with the standard.

other rubble.[1] The fill "is part of the fill placed in the old Yerba Buena Cove . . . progressively between 1852 and about 1914."[2] Groundwater in nearby areas is found approximately 8 to 10 feet below the ground surface. The soft Bay mud and the lower portion of the fill are thus saturated with water.

The lowest extent of soft, Upper Bay mud is thought to be 80 to 100 feet below the ground surface. Bay mud is generally unconsolidated, dark plastic clay and silty clay. When a load such as fill or a building is placed on Bay muds, the water is squeezed out causing a reduction in volume to occur and/or the mud to move laterally. The topographic expression of the reduction in volume or lateral movement is settlement. The amount of settlement to be expected depends on the compressibility and depth of the mud, the extent of load imposed on it, and the weight and age of the load.

Under ideal conditions of uniform thickness of mud and distribution of loads imposed, subsidence would be assumed to progress uniformly. Subsidence would gradually slow down to an imperceptible rate, at which time the mud would be in a state of relative equilibrium with its load. This equilibrium could be upset by further loading, especially if it were placed nonuniformly.

2. Seismicity

No known active faults cross the project site. However, strong ground motion could result from movement along the San Andreas, Hayward or Calaveras Faults. The San Andreas Fault zone is located approximately 9 miles southwest of the site; the Hayward and Calaveras Fault zones are approximately 15 and 30 miles to the east, respectively.

---

[1]Lee and Praszker, "Geotechnical Input for EIR on 101 Mission Street, San Francisco," July 1980.

[2]Ibid.

G. ENERGY

The proposed project would be supplied with electricity and natural gas by Pacific Gas & Electric Company (PG&E). Although PG&E has indicated that facilities of sufficient size exist in the project area and that no problems should be encountered in supplying the proposed project, a final decision on which facilities would actually supply the proposed project cannot be made until receipt by PG&E of plans for the proposed project.[1]

From August 1978 through July 1980, the warehouse on the site consumed 646 Therms of gas and 54,750 Kilowatt hours of electricity.

H. COMMUNITY SERVICES

1. Police

The proposed project site is subject to routine police patrol by a two-man squad car along Mission and Spear Streets. During daylight hours the area is also serviced by foot patrols. The area is under the jurisdiction of Southern Station at 850 Bryant Street.

Between 1 January 1980 and 30 June 1980, 87 thefts were reported for the project area; 46 of these were grand thefts. The majority of these crimes pertain to stolen automobiles and automobile stripping.[2]

2. Fire

The nearest fire alarm box to the proposed project is Box 2116 at the intersection of Main and Mission Streets. Three stations of the San Francisco Fire Department are able to respond to calls from this box:

---

[1]Courtney J. Beck, Industrial Power Engineer, Pacific Gas and Electric Company, telephone communication, 13 August 1978.

[2]Paul Libert, Officer, Planning and Research, San Francisco Police Department, personal communication, 18 August 1980.

Station 35, at 676 Howard Street with a 3-minute response time, Station 13, at 530 Sansome Street with a 3-minute response time, and Station 1, at 416 Jessie Street with a 3-minute response time. The response times from these stations to the proposed site are average times and would vary depending on the time of day, traffic conditions, weather, and other factors affecting travel on the streets.

High and low-pressure fire hydrants are located at Mission/ Spear Streets and Mission/Main Streets.[1]

3. Water

Water for San Francisco is provided from the Hetch Hetchy project and the San Francisco Water Department system via the Crystal Springs and San Andreas Reservoirs. The 140-million gallon capacity reservoir at University Mound (northeast of John McLaren Park) serves the project area as well as the Marina and the downtown and industrial areas of San Francisco. A 12-inch low-pressure water main runs along the south side of Mission Street and an 8-inch low pressure water main runs along the west side of Spear Street.[2]

4. Sewage

A 12-inch sewer line runs along Spear Street carrying wastewater flow to the Northpoint Water Pollution Control Plant. The sewer line is expected to be replaced with 12, 15 and 18 inch lines by the end of May 1981.[3]

---

[1]Captain Eugene Calamoneri, Planning and Research, San Francisco Fire Department, oral communication, 21 August 1980.

[2]George Nakagaki, Assistant Manager, San Francisco Water Department, City Distribution Division, oral communication, 18 August 1980.

[3]Nat Lee, Engineering Associate, Division of Sanitary Engineering, Department of Public Works, telephone communication, 28 April 1981.

5. Solid Waste Disposal

Domestic solid wastes in the project vicinity are collected by the Golden Gate Disposal Company. Wastes are taken to a transfer station at Tunnel Avenue and transported to a landfill in Mountain View.

6. Telephone Services

Pacific Telephone and Telegraph Company provides service to the site. The existing underground line at Spear and Mission Streets would serve the site.

I. ECONOMICS

The proposed project site is owned and currently occupied by the firm of Schou-Gallis which distributes wholesale ship supplies from the 3-story brick building. Approximately 15 people work at the site in the firm's office and warehouse.

The 1980-1981 assessed value of the project site, Assessor's Block 3717, Lot 1, was $145,894 ($108,639 in land, $35,707 in improvements, and $1,548 in personal property). At the 1980-1981 composite tax rate of $4.92 per $100 of assessed value, the site generated $7,250 in property taxes during the fiscal year.[1] These were distributed to: the City and County of San Francisco (84.8%, about $6,150); the San Francisco Unified School and Community College Districts (8%, about $580); BART (7%, about $510, for bond payments only), and the Bay Area Pollution Control District (0.2%, about $14).

In addition to property tax, the site generated about $2,300 in payroll taxes and about $1,030 in utility users tax (for water, sewer, telephone and PG&E).[2]

---

[1]Of the total tax, $5,835 represents the maximum allowable under Proposition 13 for general government expenditures ($4 per $100 per assessed valuation), and $1,415 was levied to finance bond obligations previously approved by the general electorate ($0.92 per $100 assessed valuation).

[2]Eric Schou, Schou-Gallis, telephone communication, 25 August 1980.

The City and County of San Francisco currently incurs some costs to provide services to the site such as fire and police protection, street lighting and cleaning, and street and storm drain maintenance. In addition, some costs may be incurred by the MUNI for provision of transit services for commuters working at the project site.

J. HISTORICAL

According to the U.S. Coast Survey Maps of 1853 and 1859,[1] the 101 Mission project site originally lay under water in a cove northeast of Rincon Point. The U.S. Coast Survey map of 1869 shows a structure on the site, but there is no indication of its use or architectural character. Nor do any records exist of this and any succeeding structures of the 19th century. The records of the San Francisco Water Department show that the first municipal services connection to the site was in January of 1889. The next record of interest is the 1913 Sanborn Insurance Company map in the San Francisco Water Department which shows a ship's chandlery building on the site that is most probably the present building. Although there are no existing plans or other records for the building, the style and type of structure indicate that it was built after 1900, perhaps just before or after the 1906 earthquake and fire.

Records from the City's Building Department contain a 1918 permit for interior alterations to an existing building used then as a wholesale grocery concern's warehouse. Thereafter a series of nine permits, the last in 1973, were issued for alterations and repairs to the building's interior

[1]U.S. Coast Survey Maps, 1853 and 1859; rare maps contained in the Bancroft Library, University of California, Berkeley, California, no other source known. Photographic reprints are avaialable to the public through Bancroft Library.

and exterior that were not substantial enough to change the building's architectural character. The continued use of the structure as a warehouse with offices reflects the general character of the south of Market area during the early decades of the 20th century as a place for light industrial and warehouse use. The building itself typifies its period in being a brick bearing wall structure of three stories with a basement, with wood framing, floors, and a wood truss system supporting the roof. The building has a five-bay front on Mission Street (Figure 12a, page 29), and a seven-bay front on Spear Street. The brick piers are expressed on the exterior; the brick parapet wall along the roofline was removed in 1973. Multiple-pane, wood frame windows set between the piers on all floors admit light to the building's interior. There are also two large, metal doors, one on Mission Street and one on Spear Street for service vehicles in addition to standard entrance doors at the corner of Mission and Spear Streets. The structural system is exposed on the interior. Overall the building has a straight-forward, ultilitarian appearance with minimal architectural detail in keeping with its use. The building has no architectural distinction or particular historical significance. The building is not listed in the San Francisco listing of Architecturally and/or Historically Important Buildings.[1]

The area around the 101 Mission Street site is in transition from a warehouse and light industrial use to office buildings and retail commercial (see Section II.A., Land Use, page 25). The only structure of architectural and historical significance in the immediate area is the Rincon Annex Post Office on the southeast corner of Mission and Spear Streets.

---

[1]Adopted by the City Planning Commission, Resolution No. 8600, 29 May 1980.

Constructed in 1939 with Gilbert Stanley Underwood as consulting architect and Louis A. Simon as supervising architect, the Post Office has been placed on the National Register of Historic Places, and is listed on the San Francisco listing of Architecturally and/or Historically Important Buildings.[1]

[1]Section 1011 of the City Planning Code directs that structures recognized by state or federal historical agencies are to be included on a listing of Architecturally and/or Historically Important Buildings.

CHAPTER III
ENVIRONMENTAL IMPACTS

A. LAND USE

The proposed project would replace the existing commercial and warehouse use on the site with approximately 219,350 gross square feet of office space at an FAR of 17.4:1. Although tenants of the building are unknown at this time, a permanent occupancy of about 700 to 900 predominantly white-collar workers would be expected (see Chapter III.I., Economics, page 95).

The project may also cumulatively contribute to further development within the vicinity of the site. For example, other secondary impacts, such as the development of retail, commercial and service-related establishments including restaurants, may occur as a result of the market generated by additional employment in the area (see Chapter III.K., Growth Inducement, page 104).

Several objectives and policies in the Commerce and Industry Element of the City and County of San Francisco Comprehensive Plan concerning office development, employment and cumulative impacts are of relevance to the proposed project.

Specific Objective 3: "Maintain and improve San Francisco's position as a prime location for financial, administrative corporate and professional activity."[1]

---

[1] San Francisco Department of City Planning, Commerce and Industry Element Policies and Objectives, A Proposal for Citizen Reviews, Adopted by the City Planning Commission, Resolution 8001, 29 June 1978, page 31.

Policy 1: "Encourage continued growth of prime downtown office activities so long as undesirable consequences of such growth can be avoided."[1]

The proposed project would be consistent with a desire for continued office development. However, as noted in the Element, such growth "while supporting the economic vitality of the City, has not been without its environmental and aesthetic costs . . . assuming these costs are controlled within publicly acceptable limits, the City should encourage continued office growth. It should be made clear to existing and future firms wishing to locate downtown that concern over issues of public cost and environmental impact is not merely opposition to further development but a recognition that there are practical limits to that growth which would benefit residents and business alike.[2]

Policy 2: "Guide location of office development to maintain a compact downtown core so as to minimize displacement of other viable uses."[3]

Insofar as new development would take place within the downtown area the project would maintain a compact form of development. It would displace the existing light industrial use of the site to another, yet to be determined location.

---

[1]San Francisco Department of City Planning, Commerce and Industry Element Policies and Objectives, A Proposal for Citizen Reviews, Adopted by the City Planning Commission, Resolution 8001, 29 June 1978, page 31.

[2]Ibid, page 31.

[3]Ibid, page 31.

Policy 3: "Assure that downtown development is compatible with the design and character of San Francisco.[1]

The visual impact of the proposed project is noted in Section III.B., page 58 of this report.

Policy 4: "Provide adequate amenities for those who live, work and use downtown."[2]

Amenities proposed for this project include general retail/commercial shops at the ground level, a maritime historical display, decorative paving of the sidewalk areas and a glass enclosed observation deck on the roof[3] (see Section III.B., Visual Quality and Urban Design, page 58).

Policy 5: "Control traffic and congestion in the downtown area, particularly from private automobiles.

Traffic impacts associated with the proposed project are detailed in Chapter III.C., page 65.

B. VISUAL QUALITY AND URBAN DESIGN

The proposed structure would rise 273 feet to the roof of the 20th floor. A mechanical room and 800 square foot glass enclosed observation deck would rise about 13 feet above the 20th floor (Figures 3 and 4, pages 13 and 14). An elevator equipment penthouse would rise about 36 feet above the 20th floor. The ground floor and mezzanine would be set back 33 feet from the curb line of Mission Street and 34 feet from the curb line of Spear Street. Accordingly, upper floors of the building would project over the private property portion of the sidewalk beyond the walls of the ground floor and mezzanine about 15 feet along Mission Street and 11 feet along Spear Street, creating a covered pedestrian

---

[1]Commerce and Industry Element, Policies and Objectives, A Proposal for Citizen Reviews, page 33.

[2]Ibid, page 34.

[3]See Figures 3,4 and 5, pages 13, 14, and 16.

walkway adjacent to the building. Upper floors of the structure would also project about 8 feet over a walkway on the west side of the building which would extend from a door at the southwest corner of the building to Mission Street. The walkway may eventually become part of a larger system of walkways traversing the north to south length of the block connecting to an existing interior walkway between the Borel building and Howard and Main office building fronting Howard Street. This would be contingent on development plans for the proposed Spear and Main Street office building (EE80.349) and future buildout proposals for the remainder of the block fronting Mission Street and Main Street.

Vertical columns that would support the structure would be seen as exposed elements at the street level, expressing internal building construction (Figure 3 and 4, pages 13 and 14). The columns in conjunction with the ground floor and mezzanine setback would visually define the building's base. Floors 3 through 19 would have the greatest dimensions of the structure while the 20th floor, which would be stepped inward 5 feet from the north and south building faces, would describe the major portion of the building's top. The observation deck and elevator penthouse would project upward from the 20th floor, tapering the form of the building top.

The corners of the building would be rounded, having an arc with a 4-foot 6-inch radius. The rounded building corners would be repeated near the center of the building's south side and the north side facing Mission Street defining an indentation about 22 feet in width. Visually, the rounded corners would relieve a potentially rigid appearance that could occur if right angle building edges were constructed. The Department of City Planning staff feels that this element would disrupt the appearance of the combined street facade by not matching the wall of any highrise which may be built adjacent to the proposed structure. The indentation on the north and south sides of the building is intended to break up the perceived mass of the structure, as defined by its width, length and height, creating visually apparent building sections.

A horizontal line of windows at each floor would clearly distinguish each floor level to the observer. The windows would be fixed (not operable) and tinted a color as yet undefined, and set in aluminum window frames. The spandrels[1] would be fabricated of precast concrete panels and contain a crushed granite aggregate which would be exposed on the exterior surfaces; color of the aggregate has not yet been selected. The spandrels on the north and south face indentations would contain glass, giving greater differentiation between the building's north- and south-facing wall sections. The objective of the project architect is to provide the above building design features to emphasize the southwest corner of Mission and Spear Streets.

At street level, pedestrian movement around the building at the intersection of Mission and Spear Streets would be facilitated by the rounded building corner comprised of clear glass. The glass would enclose shops and a maritime historical display for pedestrian interest. The maritime display would be intended to illustrate the maritime history of the waterfront area and contain artifacts of the Schou family, owners of the project site, who have been in the ship chandlery business for over 50 years. Items to be displayed would include photographs of early waterfront activities, shop models, paintings, and maritime fittings and artifacts.

Visual interest to pedestrians would also be provided by granite surface paving extending from the building's face to the curbline of Mission and Spear Streets. Granite pavement may be extended into the lobby, and be of a smoother

---

[1]Spandrel: In a multi-story building, a panel-like area between the top of a window on one level and the sill (base) of a window in the story above.

texture than pavement around the building's exterior. The granite pavement would be a stone color with mixed shades of darker grey and brown.

There are policies contained in the Urban Design Plan of the San Francisco Master Plan that relate to the project area and the proposed building.[1]

> Conservation Policy 6: "Respect the character of older development nearby in the design of new buildings."[2]

The building would not reflect the use of brick or exterior detailing characterizing older, lower structures constructed in the area during previous decades. As noted (Section II.B., page 27), an example of a new building which does conform to Policy 6 would be the Borel building (completed in the late 1970's) at the corner of Spear and Howard Streets which repeats the arched windows and brick construction of the Folger Coffee Company building across Howard Street.

Contrasts in exterior design between various high-rises near the project site do exist, some contrasts being more extreme than others (Section II.B, page 27). Cumulatively, the proposed 101 Mission project would represent a continuation of the trend toward buildings with more modern lines in the City's development pattern.

---

[1]San Francisco Department of City Planning, Urban Design Plan, adopted by Resolution 6745 of the San Francisco City Planning Commission, 26 August 1971.

[2]Urban Design Plan, page 25.

Major New Development Policy 6: "Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction."[1]

New construction is becoming visually dominant as older 2- to 5- story structures continue to be removed to make way for new highrise buildings. Accordingly, the mass of the proposed structure would visually relate to the scale, form and proportions of the majority of existing buildings near the project site, generally conforming to Major New Development Policy 6.

City Pattern Policy 1: "Recognize and protect major views in the City with particular attention to those of open space and water."[2]

Views from nearby buildings below about the 4th floor are confined to short distances due to surrounding buildings and elevated freeway ramps. Pedestrian views at ground level are further limited due to parked cars and trucks along curbs. The proposed structure would not be expected to block views to pedestrians and other buildings below the 4th floor level to a greater degree than currently exists. However, at higher levels in adjacent buildings, views outward would be blocked up to the building's full height; the degree

---

[1]Urban Design Plan, page 37.

[2]Ibid., page 10.

of view blockage would vary with respect to elevation and observer location in relation to the project. View blockage would decrease as the observer moves farther away from the project.

Offices on the upper floors of the structure would provide views of San Francisco Bay, Treasure Island, the East Bay Hills and portions of the San Francisco skyline. The glass-enclosed public observation deck on the building's roof would also provide views of these features as the deck would be oriented toward the east.

The structure would contribute incrementally to the total mass of buildings defining the San Francisco skyline. The building, however, would not be expected to noticeably alter or block views toward the Bay from hillside locations on Potrero Hill, Bernal Heights and Twin Peaks because Bay views are currently obstructed by other buildings in the area.

> Major New Development Policy 9: "Encourage a continuing awareness of the long-term effects of growth upon the physical form of the City."[1]

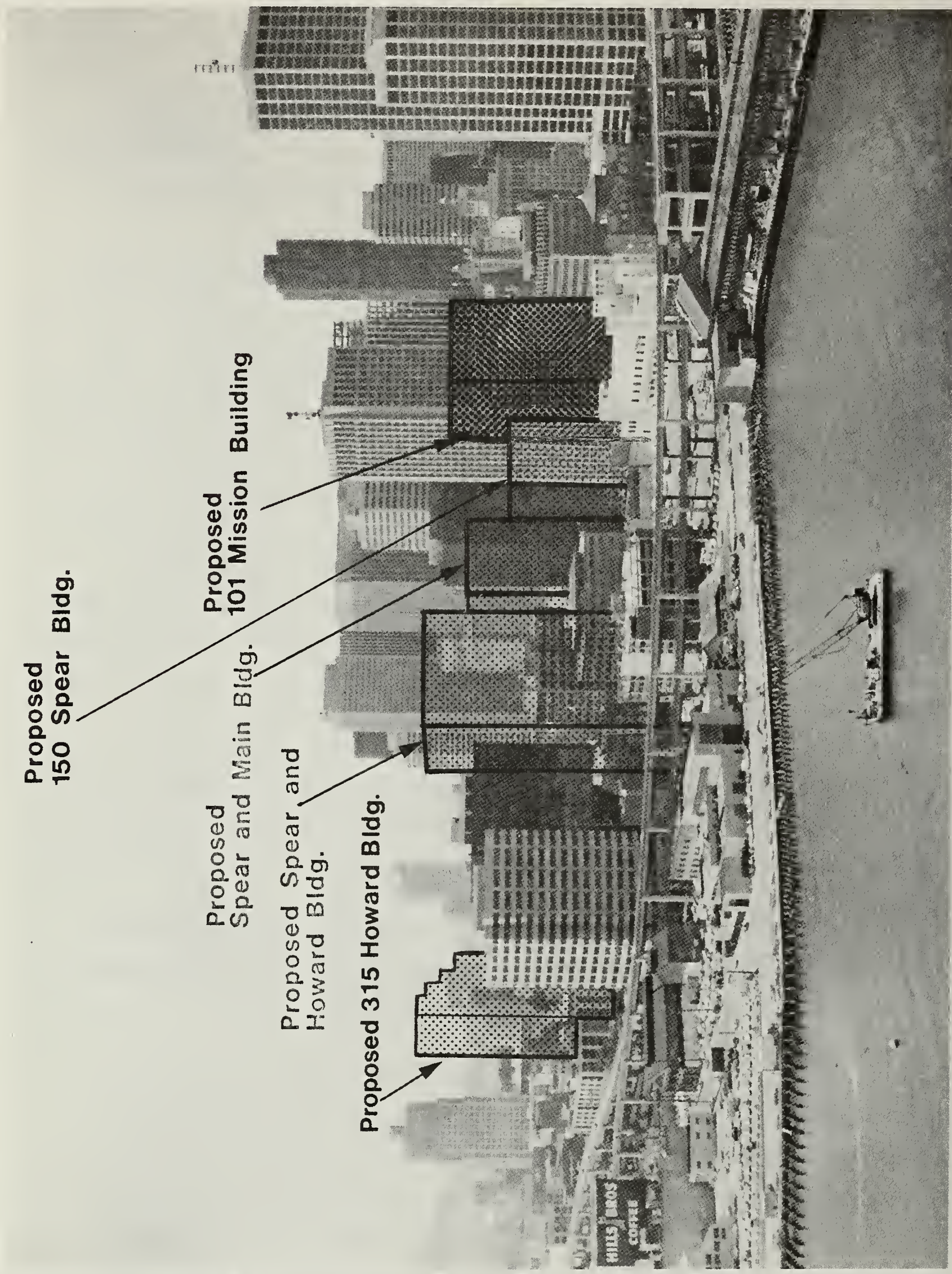
> City Pattern Policy 3: "Recognize that buildings, when seen together, produce a total effect that characterizes the City and its districts."[2]

The proposed structure would relate to Major New Development Policy 9 and City Pattern Policy 3 in terms of cumulative impacts. As noted, the building would be seen from vantage points throughout the project area. The building would also be seen from the west end of the Bay

---

[1] Urban Design Plan, page 40.

[2] Ibid., page 10.



View toward Project Site from West End of Bay Bridge Span

Source: EIP Corp.

Figure No.16

Bridge span (Figure 16). The structure would be seen as a new element in the City's emerging urban form comprised of taller buildings over an increasing land area including the Financial District and South-of-Market area. The structure would be seen as an element tapering downward from the higher skyline along Market Street and the Financial District outward toward the edge of the central business district.

If current building trends continue, future development of land adjacent or close to the project site would consist of buildings taller than the existing older structures they would replace. Accordingly, the proposed structure and future buildings in the area would contribute to defining the City's expanding, higher skyline profile.

C. TRANSPORTATION

An analysis of the transportation impacts of the proposed project must consider the project itself as well as the cumulative effect of other projects in the downtown area. Thus, the project would generate a specific number of trips which would be split among the automobile mode and various transit modes. In addition, the City has projected the cumulative trip generation and modal split of a number of other office and retail developments in the downtown area.[1] With the exception of the Bank of America Data Center II (EE74.126), all the projects would be occupied on or before the 1983 occupation projected for the proposed 101 Mission Office Building project. For purposes of cumulative impact analyses, only the Bank of America will be excluded.

---

[1]San Francisco Department of City Planning, Guidelines for Environmental Evaluation - Transportation Impacts, 3 July 1980 (revised 13 November 1980).

1. Project and Cumulative Trip Generation/Distribution

The City's transportation impact analysis guidelines[1] explicitly recommend trip generation and modal split factors as well as work/non-work trip ratios. The guidelines suggest that a total of 17.5 daily person trips should be assumed as the trip generation rate per 1,000 square feet of leasable area in an office project. The proposed 101 Mission project would therefore generate a total of 3,050 ± daily person trips of which approximately 1,740 would be work trips and 1,310 would be nonwork trips. Approximately 620 (20%) of the daily trips would occur during the evening peak hour.

In comparison with the foregoing figures, the City projection of cumulative travel for other projects is approximately 25,500 peak hour person trips. The 101 Mission project would therefore amount to about 2-3% of the cumulative peak hour trip generation.

Based upon the suggested modal split contained in the City guidelines, the apportionment of project trip generation has been calculated and compared to the cumulative trip generation of other development. The various trip totals are outlined in Table 6.

2. Impacts on the Street System

In establishing the base traffic conditions without the project, it must be recognized that traffic increases will result from already approved downtown development. A total of 9,000 new p.m. peak hour auto trips are projected as a result of this approved development (see Table 6). Although no

---

[1]San Francisco Department of City Planning, Guidelines for Environmental Evaluation -Transportation Impacts, 3 July 1980, revised October 1980.

TABLE 6

PROJECT AND CUMULATIVE TRIP GENERATION DURING

P.M. PEAK HOUR*

Mode and Distribution	101 Mission Project	Other Development	Total
Auto			
North bay	25	1,704	1,729
Peninsula	35	2,075	2,110
East bay	54	2,584	2,638
San Francisco	109	2,637	2,746
MUNI	179	7,151	7,330
BART			
East bay	50	1,989	2,039
Daly City	44	1,764	1,808
AC	52	2,082	2,134
SAMTRANS	10	367	377
S.P.R.R.	27	1,095	1,122
GGT	28	1,161	1,189
FERRY	9	353	362
OTHER	18	552	570
TOTALS	640**	25,514	26,154

*SOURCE: Modal split factors contained in Guidelines for Environmental Evaluation-Transportation Impacts, Department of City Planning, San Francisco, 3 July 1980.

**This number exceeds the 620 person trip projection (see text page 71) because intermodal transfers are included.

statistics are available for comparing this increase to the existing downtown peak hour traffic, similar comparisons are available for the various transit services. These comparisons suggest that the total peak hour auto travel in the downtown area could increase by approximately 25%. If the 25%-increase is applied to the peak hour volumes obtained for the Mission/Spear, Mission/Main and Mission/Beale intersections, the following service levels would result:

	Existing Service Level	Service Level in 1983 without 101 Mission
Mission/Spear (p.m. peak)	A	A
Mission/Main (a.m. peak)	B	D
Mission/Beale (p.m. peak)	C	D/E

Both the Mission/Main and Mission/Beale intersections would be approaching unstable flows throughout the peak hour. Traffic flows during peak 15 minute periods are up to 25% higher and extreme congestion will be experienced during such peak flow periods.

The proposed project would generate auto traffic which would be 2-3% of the volumes generated by other committed downtown development. There would be no further degradation in these intersection service levels with the 101 Mission project.

Even though the quality of traffic flow on surface streets would degrade as a result of the cumulative development, the freeways and freeway ramps will be the critical links in the overall network. With these facilities currently operating under congested conditions during peak hours, the traffic increases generated by cumulative downtown development will add to this congestion with the likely result that travel delays will be extended. A further concern is related to the potential demolition of The Embarcadero Freeway. Although no specific projections are available, the removal of this freeway would add traffic to surface streets and could focus further traffic on the Mission/Main and Mission/Beale freeway ramps. The demolition project is considered to be among the City's highest priorities, but the final decision depends upon the findings of an environmental review of the project. The federal government has allocaed $0.5 million for the environmental review of the demolition and $83 million once earmarked for the Interstate 280 connection to the Embarcadero Freeway has been transferred to other projects. [1]

3. Transit Impacts

MUNI. The 1983 patronage characteristics and load factors for the various downtown MUNI lines are outlined in Table 7. These statistics already reflect the growth in patronage due to other downtown development. The additional peak hour patronage due to the proposed project was added to the existing patronage on a proportional basis. As indicated in Table 7, the project would increase the 1983 load factors by not more than 1%. However, those lines with load factors greater than 1.00 would be experiencing congestion. Since the listed load factors are an average during the peak hour, certain runs during the peak of the peak hour could experience greater congestion.

In discussions with MUNI staff[2], it appears that the system capacity will be increased 10-15% by 1983. This increase will reflect added capacity in the MUNI Metro light-rail service, and the replacement of existing buses with articulated coaches. This capacity increase would generally relieve the projected load factors; specific benefits would depend upon a more detailed improvement program with capacity increases cited for each route.

BART. The cumulative downtown development would increase BART ridership (the proposed project would add 2-3% to this increase). It is projected that the East Bay trains would experience average peak hour load factors of 1.4-1.6 and

---

[1] Source: Telephone communication, Chi-Hsin Shao, Department of City Planning, Transportation Section, 17 April 1981.

[2] Susan Chelone, MUNI Planning Department, telephone conversation, 4 February 1981.

TABLE 7

MUNI PATRONAGE SUMMARY
P.M. ESTIMATED PEAK HOUR-OUTBOUND DIRECTION

LINE	1983 PATRONAGE WITHOUT PROJECT*	1983 PATRONAGE WITH PROJECT**	CAPACITY*	1983 LOAD FACTORS WITHOUT PROJECT*	1983 LOAD FACTORS WITH PROJECT**
1	499	502	450	1.11	1.12
1X	766	771	750	1.02	1.03
2	716	721	600	1.19	1.20
3	638	642	525	1.21	1.22
4	294	296	375	.79	0.79
5	1,233	1,241	1,275	.97	0.97
6	627	631	675	.92	0.93
7	410	413	450	.91	0.92
8	823	828	1,125	.73	0.74
9	663	667	750	.88	0.89
11	844	849	750	1.13	1.13
12	609	613	525	1.16	1.17
14	1,521	1,531	1,275	1.19	1.20
14GL	317	319	300	1.06	1.06
14X	819	824	675	1.21	1.22
15	1,108	1,115	975	1.14	1.14
21	827	832	825	1.00	1.01
27	196	197	300	.65	0.66
31	626	630	525	1.19	1.20
32	520	523	1,050	.50	0.50
38	1,236	1,244	1,125	1.10	1.11
38L	819	824	675	1.21	1.22
38AX	631	635	600	1.05	1.06
38BX	242	244	300	.81	0.81
55	1,821	1,833	1,650	1.10	1.11
80X	542	545	600	.90	0.91
J	998	1,004	1,235	.81	0.81
K	3,901	3,926	3,900	1.00	1.01
N	2,565	2,582	2,400	1.07	1.08

*Capacity patronage (without project) and load factorss (without project) obtained from Guidelines for Environmental Evaluation-Transportation Impact, Department of City Planning, San Francisco, 3 July 1980 (revised 13 November 1980).

**Patronage and load factors (with project) reflect a proportional distribution of the proposed projects estimated Muni patronage (see Table 4, page 39).

higher factors on certain peak trains. BART's short-term (5-year) improvement program calls for an approximate 20% increase in capacity (with added cars and some decrease in headways.[1] These improvements would allow the peak hour load factors to average 1.1-1.3 and these factors are considered by BART staff to be acceptable.[2]

AC Transit. AC Transit's current peak hour service has a capacity reserve of 3,500 persons (assuming capacity equals 125% of the vehicle seats). The proposed project and cumulative development would generate about 2,150 trips, absorbing most of this excess capacity. A.C. Transit staff indicate the capacity will be increased approximately 10% over the next 3-4 years and this increase will raise the capacity reserve while preserving somewhat lower load factors on peak-hour vehicles[3]. If the proposed downtown bus terminal to replace the existing Transbay Terminal is built, it could increase operating efficiency to the point where it could accommodate a greater number of buses per hour. This would depend upon which proposed alternative is chosen.[4]

Golden Gate Transit. With a design capacity of 8,085 peak-hour passengers, the effect of cumulative downtown development would be to raise patronage beyond this figure. Because of financial limitations, the District will likely not be able to markedly increase its capacity.[5]

---

[1]Ward Belding, BART Planning Staff, telephone communication, 23 July 1980.

[2]Ibid.

[3]Gene Gardner, AC Planning Staff, telephone communication, 23 July 1980.

[4]Telephone communication, Alan Lubliner, Department of City Planning, Transportation Planner, 15 May 1981.

[5]Based on information contained in the Draft Environmental Impact Report for Proposed Pacific Gateway Office Building Project (EE 78.61); also telephone communication with Peter Dyson, Golden Gate Transit, 17 July 1980.

The Southern Pacific service will be improved through the addition of (within 3-5 years) approximately 1,200 seats to the southbound peak hour capacity[1]. With the systems existing reserve capacity of about 1,530 seats, the total capacity reserve would be about 2,730 seats. Thus, the addition of 1,122 new peak hour passengers (due to cumulative downtown development) could be accommodated.

4. Parking Impacts

Based upon the trip generation characteristics of the project, the parking demand has been calculated at approxi-imately 218 long-term spaces and 82 short term spaces.[2] Since all the previous parking inventory/occupancy surveys in the area indicate present occupancy rates of 85-95%, little parking is available in the area. The occupancy will be higher with the proposed project and the completion of two other nearby projects under construction: the Pacific Gateway and 150 Spear Street office buildings. In addition, the cumulative down-town development projected for the next 3 years would add to the parking demand in the downtown area. Although the proposed project would account for only 2-3% of this increase in parking demand, there would be cumulative impacts. It is likely that parking would shift further from downtown with increased demand

---

[1]SamTrans data based on telephone communication with Larry Stueck, SamTrans staff, 27 March 1981. Southern Pacific data based on telephone communication with Cecil Smith, CalTrans 27 April 1981.

[2]Long term parking = 1,740 daily person commute trips x 25% auto ÷ 2 trips per vehicle. Short-term parking = 1,310 daily non-work trips x 50% auto ÷ 2 trips per vehicle ÷ turnover rate of 4 (per day).

south of Folsom Street and beyond. Added vehicle circulation would also result from the increased number of vehicles seeking the limited parking spaces.

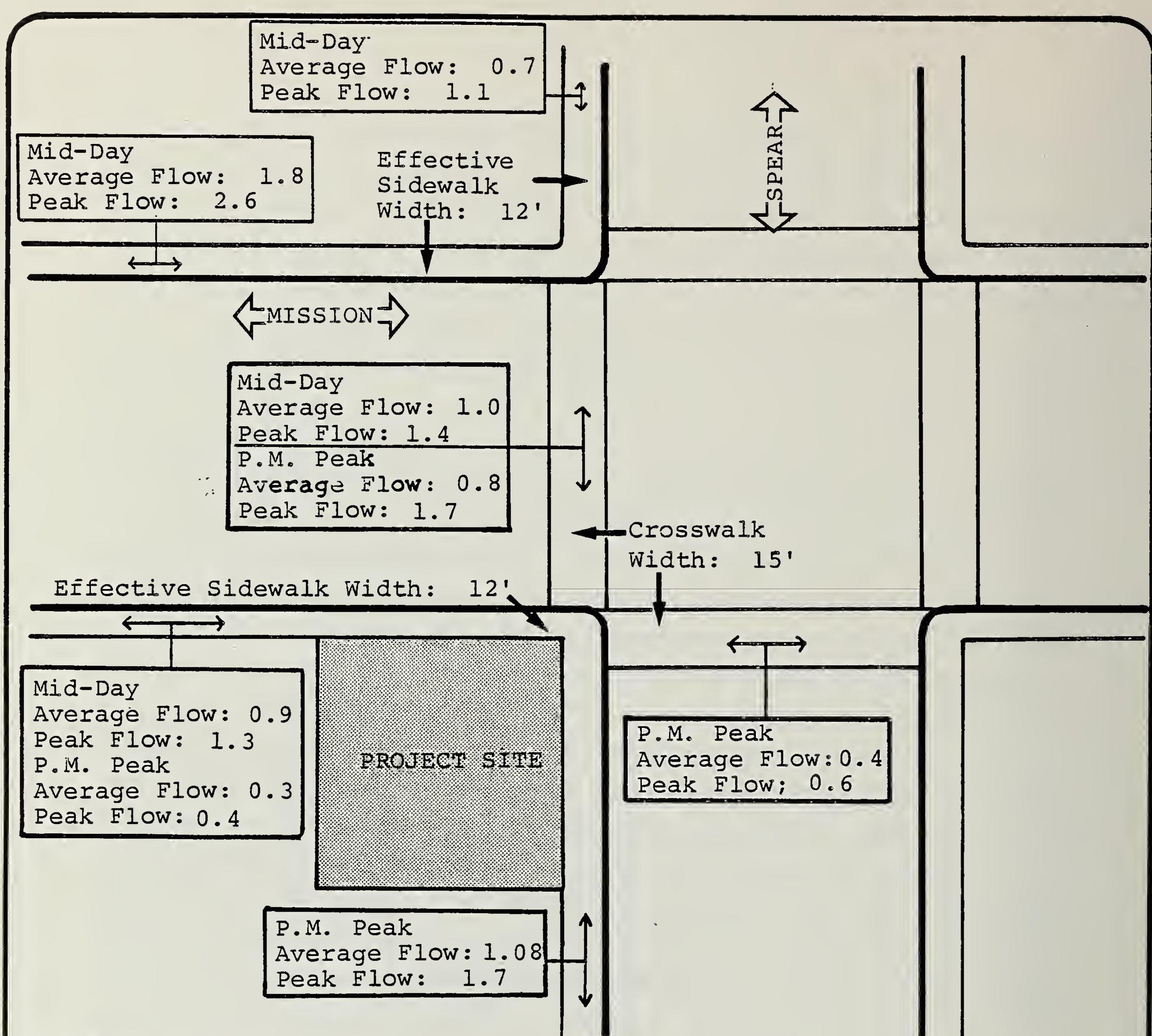
The proposed project's truck loading needs have been calculated on the basis of guidelines developed as a part of the Center City Circulation Program. These guidelines recommend 0.1 space per 10,000 square feet of office area. With 179,000 net sq. ft. of office space, this project would need 1-2 off-street truck loading spaces. The proposed project's 3 van loading spaces in the basement and delivery space on the south side of the building would meet this requirement. It is recognized however, that trucks may use the on-street loading areas. If all these areas were unavailable, double parking would likely occur.

5. Pedestrian Impacts

Since all the proposed project's trips would involve at least some walking, pedestrian trips have been added to the sidewalks and crosswalks adjacent to the project site. Based upon travel research conducted by the California Department of Transportation,[1] it is estimated that approximately 30% of the daily trips would occur in the 4:00 p.m. - 6:00 p.m. period and 20% in the 11:30 a.m. - 1:30 p.m. period. Thus, 610 midday pedestrian trips and 915 p.m. peak period trips have been added to the existing pedestrian flows and the total projected flows are depicted in Figure 17. Based upon these projections, the quality of pedestrian flow would remain unchanged from the existing characteristics. However, the addition of other

---

[1] Tenth Progress report on Trip Ends Generation, CalTrans District 4, 1975.



Note:
Flow rates are persons/minute/foot of walkway width.

1. Average Flow is the average one minute flow rate during the entire 11:30 a.m. - 1:30 p.m. period and/or the 4:00 p.m. - 6:00 p.m. period.

2. Peak Flow is the average one minute flow rate during the peak 15 minute period within the 11:30 a.m. - 1:30 p.m. period and/or the 4:00 p.m. - 6:00 p.m. period

Projected Pedestrian Flows

North

Not to scale

⟷ Indicates pedestrian movement

Figure No.17

Source: EIP Corporation

pedestrian activity due to the 150 Spear Street project and proposed development in the area could cause pedestrian flow conditions to degrade to a "constrained" condition (see Section II.B., Environmental Setting, Transportation, page 43, for a description of pedestrian flow quality).

A secondary pedestrian impact would relate to the potential for mid-block crossings of Mission Street. The proposed project would include a pedestrian walkway which would lead to/from Mission Street at the west side of the building. This access may result in mid-block crossings of Mission Street by the project occupants.

Pedestrian movement would be intermittently interrupted by vehicles entering or leaving the building or loading area, increasing pedestrian safety problems at the building's southeast corner. The curb-cut (depressed curb) would be about 30 feet in length.

6. Construction Impacts

Although no specific construction process has been formulated, it is projected that about a 2-year construction period would be required. Based upon the construction employee projections for a similar project,[1] this project would have a peak construction employee parking demand of approximately 30 spaces. This demand would compete for the limited parking available in the area.

Although the construction traffic volumes would likely not be high in relation to existing traffic, trucks and other construction traffic could disrupt traffic flow. Trucks and equipment could block some portions of the adjacent streets throughout the construction process. In addition, construction activities would likely encroach onto sidewalks, causing a possible reduction in sidewalk widths and pedestrian congestion.

---

[1]Final Environmental Impact Report, 315 Howard Street office Building, EE 79.196, certified 21 August 1980.

D. NOISE

1. Compatibility with Existing Noise Environment

The proposed structure would be fitted with fixed windows. Fixed windows would reduce traffic noise by about 30 dBA, resulting in instantaneous maximum levels of up to 56 dBA inside the building as buses or trucks pass the site. The Leq inside the perimeter rooms of the part of the building facing Mission Street would be 45 dBA and the Leq would be about 40 dBA along Spear Street[1]. An Leq of 45 dBA would be the upper limit of acceptability for traffic noise in a private or semiprivate office or small conference room where good listening conditions are desired. The projected instantaneous maximum levels of up to 56 dBA could interrupt a speaker talking in a normal tone of voice in a small conference room. These maximum levels would not be expected to interfere with telephone conversations; however, they would be sufficiently high to cause some distraction.[2]

2. Noise Impact on Adjacent Land Uses

Post-construction operation of the 101 Mission Street building could affect the existing acoustic environment by generating additional traffic in the vicinity, hence causing an increase in overall traffic noise levels. Based on projected traffic levels as a result of the project (see Section III.C., Transportation, page 65), the amount of traffic generated by the building during any hour of the day would cause noise levels to increase by less than 1 dBA on any of the adjacent streets.[3] A 1 dBA increase in environmental noise is undetectable by the human ear. Mechanical equipment associated with the building would add to the noise environment. Elevator motors, exhaust fans and a cooling tower for air conditioning equipment would be included; however, none of these items have been selected at this time and specific noise levels cannot be determined. The equipment would be enclosed in penthouse structures (see Figures 3 and 4, pages 13 and 14) which would reduce potential noise levels outside the building.

---

[1]dBA and Leq are defined on page 45 of this EIR.

[2]Source: Charles M. Salter and Associates, Consultants in Acoustics.

[3]Ibid.

3. Construction Noise Impacts[1]

Construction of the 101 Mission Street building would take place in three phases: excavation, foundation construction, and building erection. Construction noise levels would fluctuate measurably depending on the following variables: the phase of construction, the duration, the type(s) of equipment used during that phase, the noise emitted during its "noisy" mode of any particular item(s) of equipment in use, the proportion of the day during which the equipment would be operated in its noisy mode, the mobility of the equipment (e.g. the noise source might be a stationary air compressor or a self-propelled backhoe), the distance between the noise source and the receptor, and the noise propagation characteristics of the path between the noise level at the receptor). The worst case noise impacts associated with the various phases of construction have been estimated.

During building demolition, site grading and excavation, front-end loaders would be expected on the project site. Noise measurements show that these pieces of equipment generate from 64-79 dBA at 100 feet. Twenty trucks per day would enter and leave the site for a period of two weeks during the excavation phase. During foundation construction, the major noise source would be piledriving, noise levels of approximately 105 dBA at 50 feet can be expected. After the piledriving phase, concrete pumpers, power saws, cranes, air compressors, engine generators, and impact wrenches would be the major noise sources. These pieces of equipment emit from 70-95 dBA at 50 feet. The impact wrenches emit the highest noise levels of 95 dBA at 50 feet; they would be used intermittently during the framing of the building for a period of 2 months.

The occupied land uses nearest the construction site are the brick building south of the project on Spear Street, the brick building west of the project site on Mission Street, the office buildings across Mission Street from the

---

[1]Source: Charles M. Salter and Associates, Consultants in Acoustics.

site, and the Rincon Annex located across Spear Street from the site (see Section II.B., Land Use, page 24). Because the buildings adjacent to the site share the property line of the proposed construction site, noise-generating activities would occur within 5 to 10 feet of the outside of these buildings. At this distance noise levels outside the nearest offices could reach 120 dBA during piledriving, an activity which would be expected to occur about ½ day over a period of about 35 working days. With the windows in the building closed, noise reduction of about 20 dBA would be provided resulting in noise levels of about 100 dBA inside. Office workers would not be able to carry on a conversation, would not be able to use the telephone and would be distracted from their work and probably complain to the management. In addition to the noise levels generated by this activity, vibration levels would be great enough to shake the building. During piledriving, sound levels in the office buildings across Mission Street from the site and in the Rincon Annex across Spear Street would be expected to reach about 75 dBA. These levels would be high enough to distract the office personnel from their work.

During use of impact wrenches directly outside the adjacent Spear Street building, noise levels could reach 85-90 dBA outside. This activity would be sporadic, but workers in offices nearest the noise source would not be able to use the telephone or carry on a conversation when the impact wrenches were in use.

As construction would move to other portions of the site, noise levels in the adjacent Spear Street and Mission Street buildings would become similar to noise levels predicted inside the buildings across Mission Street from the site.

Trucks going to and from the construction site would not be expected to generate sound levels higher than existing truck and bus traffic in the area. The construction truck traffic would not result in a measurable change in the average noise environment in the area.

E. CLIMATE AND AIR QUALITY

1. Climate

The existing low winds near the project site would remain unchanged by construction of the proposed project (see Appendix C, Microclimate Impact Study, page 149). Shadows from the proposed building would affect sidewalk areas of the Mission and Spear Streets intersection in all seasons at midday. The pedestrian passageway to the west of the proposed building would be shaded by neighboring buildings, but would be sheltered from prevailing winds. The frequency of pedestrian discomfort would be increased in the areas of new shade.

2. Air Quality

Construction activities would generate pollutants in the vicinity of the project. Trucks and equipment would release exhausts and earthmoving and grading would generate dust and suspended particulates. Emission factors[1] were developed for shopping center and housing construction in suburban desert areas, and have little applicability to downtown construction, where exposed soils consist of mostly moist sand and vehicles access the site via paved roads. Construction dust and particulates from BART construction in San Francisco did cause measured levels of total suspended particulates to exceed the State and Federal standards on several occasions.[2]

Direct atmospheric emissions of primarily carbon monoxide from the project would be from combustion of natural gas for water and space heating. Natural gas is a relatively

---

[1]U.S. Environmental Protection Agency, Compilation of Air Pollution Emission Factors, 2 April 1977.

[2]Mike Basso, Air Pollution Meteorologist, Bay Area Air Quality Management District, telephone cummunication, 13 May 1981.

clean-burning fuel; therefore, no visible fumes would occur. Exhaust gases would be emitted at rooftop level and would be diluted to concentrations below the ambient air quality standards (Table 8) before reaching ground level.

The project would act as an indirect source of atmospheric emissions by generating automobile traffic. On the local scale, carbon monoxide (CO) is the most important pollutant emitted by automobiles.

Projected carbon monoxide concentrations for 1983 near the site with the project and other anticipated projects (including the Yerba Buena Center) were calculated using traffic volumes presented in the Transportation Impacts section. Results for worst-case meteorological conditions are summarized in Table 8. These concentrations represent the exposure a person would have at curbside. The highest concentration would occur along Howard Street. Carbon monoxide levels would drop off rapidly with distance from curbside.

The regional impact of the project would be due to the increase in Vehicle Miles Traveled (VMT) associated with the project.

TABLE 8
Curbside Carbon Monoxide Concentrations
in 1983
(parts per million)

	1-hour	8-hour
Beale Street	6.2	3.1
Howard Street	8.9	3.0
Spear Street	5.4	2.9
Federal Ambient Air Quality Standards	35.0	9.0

Based upon the estimate of project trip generation and destination (see Chapter III.C., page 65), the daily regional increase of VMT is estimated at 29,000. Using updated composite emission factors supplied by the Bay Area Air Quality Management District and assuming an average trip speed of 25 mph, total regional emissions from the project traffic have been estimated in Table 9.

TABLE 9

Regional Automobile Emissions
(tons/day)

Pollutant	1983 Project Emissions	1983 Regional Emissions[1]
Carbon Monoxide	0.64	1,500
Hydrocarbons	0.06	950
Nitrogen Oxide	0.07	800

[1] Bay Area Air Quality Management District, Air Pollution and the San Francisco Bay Area, June 1977.

The increase in regional emissions would result in degradation of regional air quality. Of particular importance are the increases in hydrocarbons and oxides of nitrogen which result in the formation of photochemical oxidants. A recent study of regional air quality[1] found that photochemical oxidants would be a persistent problem in the future, and that reductions in hydrocarbons and oxides of nitrogen emissions would be necessary to attain the federal standard for photochemical oxidant in the Bay Area. The project's emissions would represent an increase of, at the most, 0.04% in regional emissions. Photochemical oxidant modeling conducted for the proposed Yerba Buena Center[2] Redevelopment Center showed that the emissions from that project would result in no measurable change in Bay Area oxidant concentrations. The regional emissions for the proposed project would be about 5-10% of those for the Yerba Buena project; therefore, no measurable effect on regional oxidant concentrations would be anticipated.

F. SOILS AND SEISMICITY

1. Soils

During demolition of the existing building and excavation and removal of building debris, rubble and soil could be spilled into the streets presenting a safety hazard for pedestrians and vehicles. The spillage could also be a source of siltation in storm drains.

Due to the relative lack of strength and stability of underlying soils, the proposed building would be constructed on piles. Pile foundations, which penetrate through the soft mud to stronger material, would reduce or eliminate vertical

---

[1]Association of Bay area Governments, 1979 Bay Area Air Quality Plan, January 1979.

[2]San Francisco Department of City Planning and San Francisco Redevelopment Agency, Final Environmental Impact Report, Yerba Buena Center, certified 25 April 1978, page 382.

settlement of the structure. However, lateral movement of the soft mud layer, or settlement, could subject the piles to overloading.

Prior to the construction of some buildings, dewatering of the ground to below the foundation is required. Groundwater can loosen sands and soften clays, resulting in hazardous excavation. Dewatering on the site, if required, could cause settlement of soils on the site and in neighboring areas, damaging existing buildings, streets, sidewalks and utilities if mitigation measures were not implemented. Because the exact depth to groundwater at the project site has not been determined, it has not yet been determined if dewatering would be required for basement construction.

2. Seismicity

Seismic activity on a major fault in the San Francisco Bay Area could cause hazards to the human environment. If proper design of foundation and structure were not implemented, major building structural damage or collapse could occur due to groundshaking and ground failure. Liquefaction[1] is also a potential hazard on the site.

If a severe earthquake, such as the 1906 San Francisco earthquake of estimated Richter magnitude 8.3,[2] were to occur along the San Andreas Fault in the Bay Area, violent groundshaking would occur. The project site is located on zone B on the map "Estimated Intensity of Future Groundshaking" (see Figures 15a and 15b).[3] Groundshaking, which is caused by ground-transmitted seismic waves, would be

---

[1]Liquefaction: Earthquake induced transformation of a stable granular material, such as sand, into a fluid-like state, similar to quicksand.

[2]Richter Scale: A logarithmic scale developed by Charles Richter to measure earthquake magnitude by the energy released, as opposed to earthquake intensity as determined by effects on people, structures, and earth materials.

[3]URS/John A. Blume, San Francisco Seismic Safety Investigation, prepared for the Department of City Planning, City of San Francisco, June 1974.

expected to be of high intensity due to wave amplification in soft, unconsolidated soil (hence, the "B" zoning designation on Figure 15a). Violent groundshaking indicates general collapse of weakly built brick and frame structures; well-constructed buildings would be subjected to serious cracking; and there would be lateral displacement of streets, bending of rails, and ground fissuring.[1]

One possible secondary effect of groundshaking would be lateral spreading, which results from loss of strength in fine-grained, cohesive materials, and manifests itself in squeezing of soft, saturated clays such as Bay mud. Spreading can cause rapid or gradual loss of strength in foundation materials, and structures can either gradually settle or break up as foundation soils flow laterally. Where Bay muds become more consolidated, this effect would lessen in severity.

Lurching is another secondary effect of groundshaking. It occurs when large amplified waves from an earthquake result in surface cracks in relatively stiff fill overlying Bay mud. During the 1906 earthquake, lurching was a prominent feature in the tidal mud flats of Tomales Bay and in the uncontrolled fills of downtown San Francisco. Where the Bay muds reach equilibrium under the weight of the fill, the likelihood of lurching would decrease.

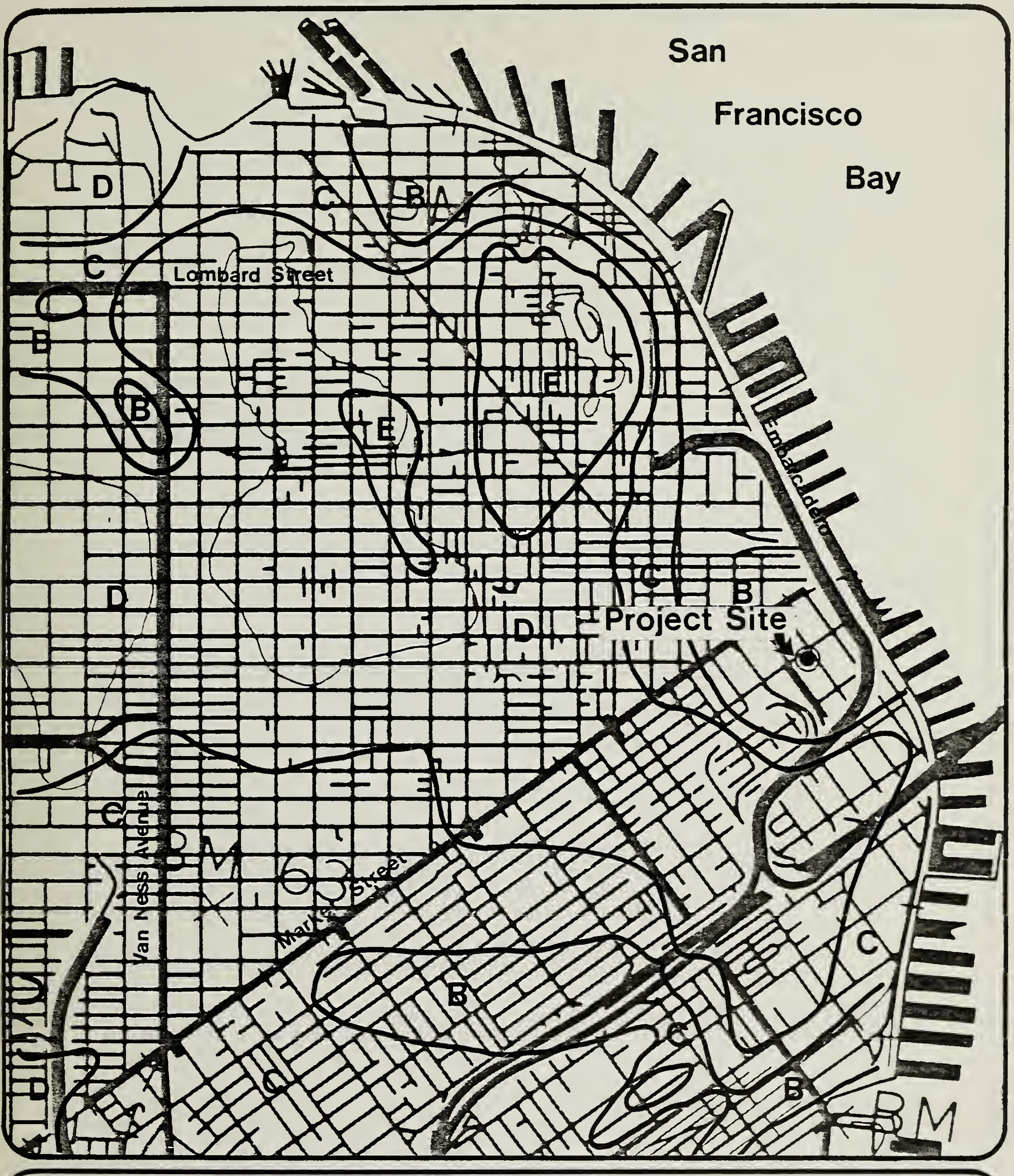
The preliminary geothechnical report[2] concluded that:

> "the natural soils in the vicinity of the site will not be subject to compaction, liquefaction or internal disintegration during an earthquake. The man-made fill, however, due to its loose

---

[1]URS/John A. Blume, San Francisco Seismic Safety Investigation, prepared for the Department of City Planning, City of San Francisco, June 1974.

[2]Lee and Praszker, "Geothechnical Input for EIR, 101 Mission Street," San Francisco, July 1980, page 5.



Estimated Intensity of Future Ground Shaking

(Refer to Legend, Figure 18b)

North

0 1,000 2,000 4,000

Scale Feet

Source: San Francisco Seismic Safety Investigation, John A. Blume & Associates, June, 1974

Figure No. 18a

A Very violent. Cracking and shearing of rock masses. Deep and extended fissuring in soil, many large landslides and rockfalls.

B Violent. Fairly general collapse of brick and frame structures when not unusually strong. Serious cracking of better buildings. Lateral displacement of streets, bending of rails and ground fissuring.

C Very strong. Masonry badly cracked with occasional collapse. Frame buildings lurched when on weak underpinning with occasional collapse.

D Strong. General but not universal fall of brick chimneys. Cracks in masonry and brick work.

E Weak. Occasional fall of brick chimneys and plaster.

NOTE: Intensities are given for earthquakes similar to the 1906 event in Magnitude and proximity to San Francisco.

Legend:

Estimated Intensity of Future Ground Shaking

Figure No. 18b

state and the high groundwater level, could be subject to such detrimental phenomena during a major earthquake, some of which phenomena did occur in the project area during the 1906 earthquake. The effects of these phenomena on the integrity of the structure are likely to be minimal because of the use of deep foundations."

G. ENERGY

1. Construction

One method of calculating the energy that would be consumed in constructing the proposed building would be to total the energy costs of all materials used and the cost of energy consumed by all equipment used during construction. A less precise but more practical procedure is to use a gross energy consumption/dollar cost ratio.[1] Based on an estimated construction cost of about $17.5 million, it is estimated that 46 billion BTU[2] of energy would be consumed during construction of the proposed project.[3] This is equivalent to about 8,500 barrels of crude oil.

2. Operation

The gas and electrical consumption estimates for the proposed structure are based on a computer analysis that was

---

[1]Tetra Technology, Inc., Energy Use in the Contract Construction Industry, Arlington, Virgina, 1975.

[2]BTU= British Thermal Unit. The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at about 39 degrees Fahrenheit.

[3]Environmental Impact Planning Corporation, Energy Impact Handbook, San Francisco, 1976, Table C-10f.

completed by Crichfield Mechanical Incorporated for this report.[1] Natural gas would be used for space heating and domestic hot water heating. Electricity would be used for lighting, air conditioning, elevators and operating electric office machines. The analysis in this EIR is based on the results of the following design features being incorporated into the structure.

- All exterior walls and the roof would be insulated.
- Tinted glass would be used in the windows. Windows would be fixed (non-operable).
- A lighting load of 2.75 watts per square foot.
- Drapes on the south side of the structure would be drawn on warm sunny days.
- The structure would incorporate a cooling system.
- Each floor would have an individual air handling unit.
- Each floor would have its own economizer cycling unit.
- A heating system would be used to primarily heat only perimeter areas.
- Nighttime and weekend building temperatures would be automatically set at 60 degrees Fahrenheit.
- Compensators would be used to automatically lower thermostats on sunny days when passive solar heat gain is at a maximum.

a. Electricity

The project's estimated average monthly electrical consumption would be about 190,000 kilowatt hours (kwh),

---

[1]Art Williams, Crichfield Mechanical Incorporated, telephone communication, August 14, 1980. This computer analysis is only an estimate of expected consumption for the proposed structure. A more detailed computer analysis would be completed at a later time to determine if the structure would comply with Title 24, Division 20, Article 2 requirements (see Section IV.F., Mitigation, page 115).

equivalent to .85 kwh per square foot of gross floor space. Daily and annual load distribution curves for electrical energy consumption are given in Figure 19. Because tenant use of computers has not been determined, final electrical consumption cannot be precisely determined until the tenants are known.

b. Natural Gas

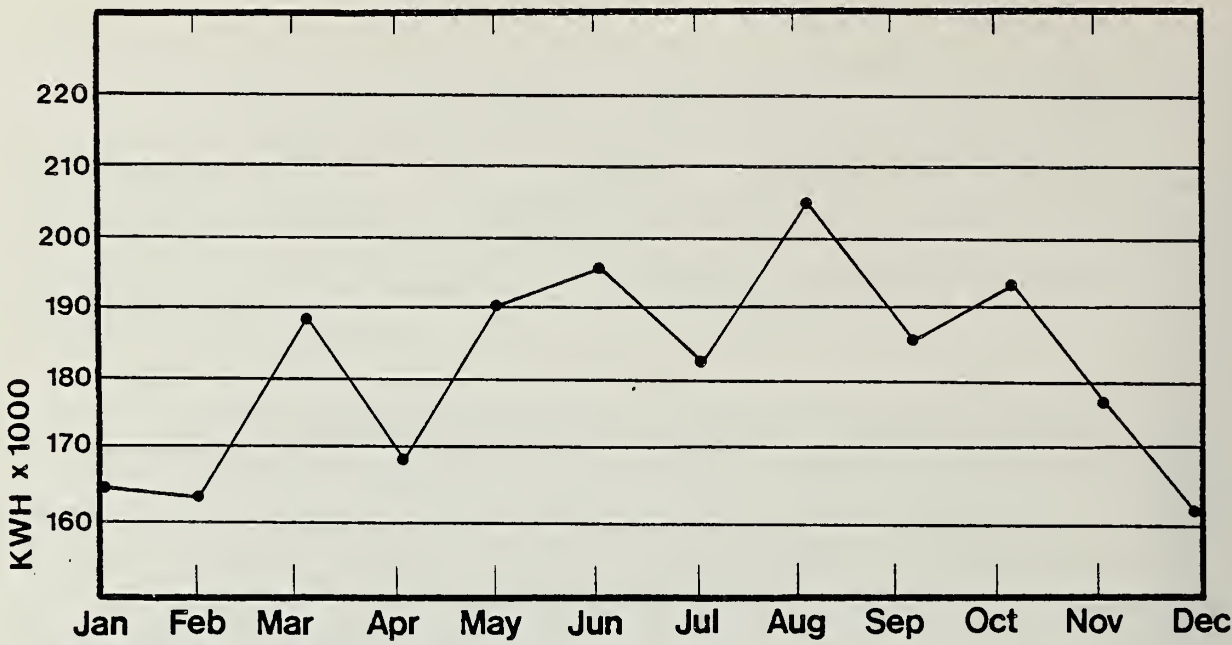
The estimated average monthly natural gas consumption for the proposed project is 112 BTU per square foot of floor space. The magnitude of the estimated peak natural gas demand for the project is 16 therms per hour.[1] Daily (January peak demand day) and annual load distribution curves for natural gas use are given in Figure 20. Because space heating requirements would vary with the tenant office furnishings and equipment, final gas consumption cannot be precisely determined until the tenants are known.

3. Transportation

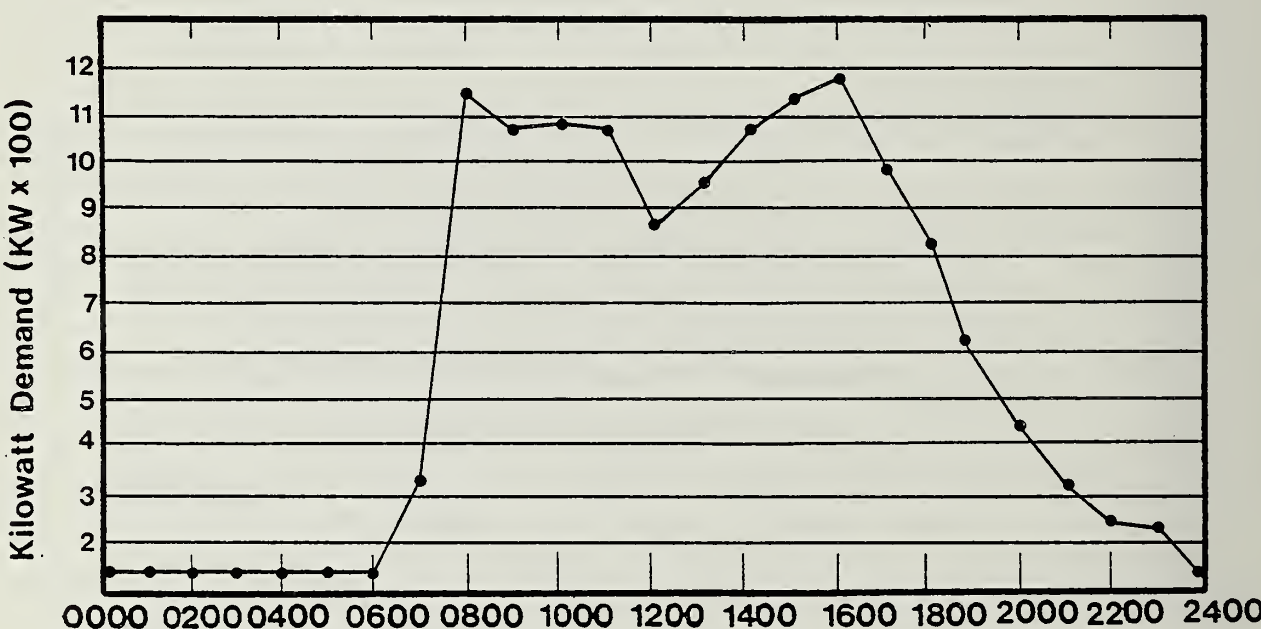
Based on an estimated daily increase in regional VMT of 29,000 (see Section III.E., Environmental Impacts, Climate and Air Quality, page 79), the annual automobile energy use for the project is estimated at 46 billion BTU. This is equivalent to 370,000 gallons of gasoline, or 8,400 barrels of oil. Energy annually consumed for auto transportation would be about double the annual energy consumed to operate the proposed building. Energy consumed for bus, rail and ferry transit occupants of the building would be in addition to the above quantities.

---

[1]Therm: 100,000 BTU



Monthly Consumption

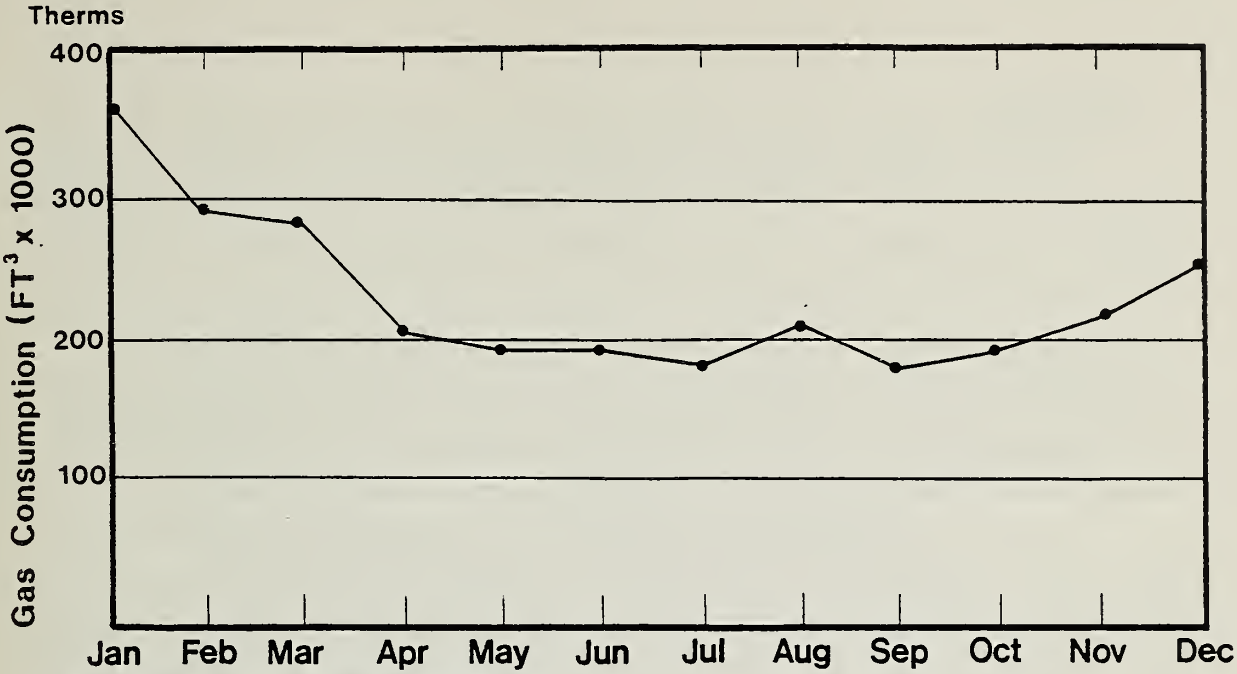


Hourly Consumption

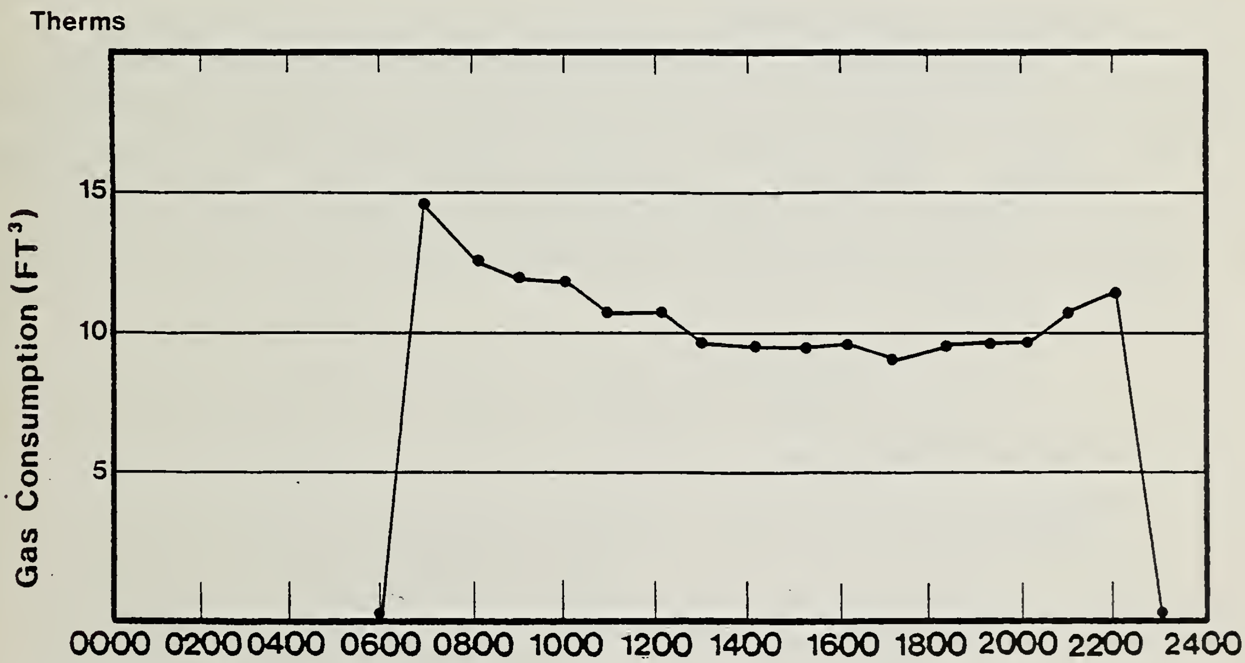
Estimated Electrical Consumption

SOURCE: Crichfield Mechanical, Inc.

Figure No. 19



Monthly Consumption



Hourly Consumption

Estimated Gas Consumption

SOURCE: Crichfield Mechanical, Inc.

Figure No. 20

4. Removal

The proposed project would require the removal of the existing warehouse and, at potentially 50 years or more in the future, the removal of the proposed structure itself. Present demolition characteristics are similar to construction characteristics in their energy use. Thus, using the same consumption/dollar cost formula used to determine construction energy consumption, it is estimated that the warehouse would require .3 billion BTU to remove.

It is difficult to predict the energy consumption of demolition methods in the distant future. If demolition characteristics remain similar in their energy use as construction, then the energy cost of removal would be about 46 billion BTU.

5. Lifetime Energy Costs

The estimated lifetime energy cost resulting from the project (includes construction, operation, employee transportation and removal) would be about 3.5 trillion BTU. This is equivalent to approximately 660,000 barrels of crude oil (1 barrel = 42 gallons). This energy cost assumes a potential 50-year lifetime for the building.

H. COMMUNITY SERVICES

1. Police

An increase in office space and employment in the vicinity could increase the number of petty theft incidents. However, it is not anticipated that the proposed project would require additional demand for police services, and patrols would not be increased.[1] However, completion of the Moscone Convention Center may require additional personnel.

---

[1] Officer John Parenti, Southern Station, San Francisco Police Department, personal communication, 18 August 1980.

The cumulative effect of growth south of Market Street may eventually present the need for a foot-patrol in the project area.[1]

2. Fire

Annual consumption of water from the high-pressure fire-fighting line would be limited to sprinkler flow alarm testing unless there were a major fire in the building.

Water pressure and supply is adequate in the project area for the building's fire protection needs.[2] Implementation of the project could generate more resuscitation (rescue and first aid) calls than previously experienced at the site. The proposed project would not require additional manpower or equipment.[3]

3. Water

Current average daily water use in San Francisco is 80 million gallons per day (gpd). At full occupancy the project would consume approximately 25,000 gpd.[4] Water pressure and supply are adequate to serve the proposed project. The water department anticipates no difficulty in

---

[1]Paul Libert, Officer, Planning and Research, San Francisco Police Department, personal communication, 3 November 1980.

[2]Gene Anderson, Superintendent, Bureau of Engineering and Water Supply, San Francisco Fire Department, personal communication, 18 August 1980.

[3]Captain Eugene Calamoneri, Planning and Research, San Francisco Fire Department, personal communication, 18 August 1980.

[4]Brown & Caldwell Consulting Engineers, 1972, Report on Wastewater Loading From Selected Development Areas, as cited in San Francisco City Planning Commission and San Francisco Redevelopment Agency, 1978, Final Environmental Impact Report/Yerba Buena Center (office use of 125 gallons per 1,000 square feet of usable floor space).

providing service to the site.[1] Application for water service has been submitted by the project sponsor.

4. Sewage

At full occupancy, wastewater flows generated by the project would be expected to be approximately 25,000 gallons per day. Annual generation is estimated at 851,900 cubic feet per year. All sewage generated by the project would be transported to and receive treatment from the Northpoint Water Pollution Control Plant.

There is sufficient sewer capacity to handle the wastewater that would be generated by the proposed building. The sewer lines in the project area are currently being replaced. Completion of the work is scheduled for the end of May 1981.[2]

5. Solid Waste Disposal

The project would generate approximately 1 ton of solid waste per day.[3] Golden Gate Disposal Company would have no difficulty in meeting this demand.[4]

6. Telephone Service

Pacific Telephone and Telegraph Company (PT&T) would supply service to the site by laying conduit from the

---

[1]George Nakanishi, Assistant Manager, City Distribution Division, San Francisco Water Department, personal communication, 18 August 1980.

[2]Nat Lee, Engineering Associate, Division of Sanitary Engineering, San Francisco Department of Public Works, oral communication, 29 April 1981.

[3]State of California Solid Waste Management Board, "Solid Waste Generation Factors in California," 1974.

[4]Rose Onteo, Golden Gate Disposal Company, oral communication, 29 April 1981.

existing lines on Spear Street. Pedestrian and vehicular flow could be disrupted for up to one week during the installation of underground lines to the site.[1] PT&T expects no difficulties in providing service to the project.[2]

I. ECONOMICS

1. Economic Activity and Employment

a. Office and Rental Space

The downtown central business district of San Francisco currently is estimated to contain about 57 million gross square feet of office space.[3] Almost half of this space is in office buildings with a height of 10 stories or more built in the last 30 years. San Francisco is experiencing a demand for office space unprecedented in its history. Lenders, leasing agents, developers and office space users all confirm the almost total lack of available office space in the downtown area as the vacancy rate may be less than one percent.[4]

The project would continue the trend toward higher rents and more intensive use of land in the downtown business

---

[1]Barney Parish, Study Group, Pacific Telephone and Telegraph Company, oral communication, 29 April 1981.

[2]Dan Hanson, Facility Engineer, Pacific Telephone and Telegraph Company, oral communication, 29 April 1981.

[3]The estimate of over 57 million gross square feet of downtown office space is based on an existing inventory detailed in several environmental impact reports for office buildings in San Francisco: Daon Building EIR (EE 79.57) March 1980; 315 Howard EIR (EE 79.196) August 1980; and 101 California EIR (EE 78.27) August 1979. The estimate includes buildings under 10 stories.

[4]Rich Carcioni, sales consultant, Cushman & Wakefield of California Incorporated; Susan Shipley, DAON Corporation, Matt Harrison; sales consultant, Coldwell Banker, telephone conversations, 28 April 1981.

district. The 3-story warehouse on the project site would be demolished and the proposed 220,000 gross square feet office building would add about a .35 percent increase to the inventory of highrise office space in the area.

The proposed project would result in a displacement of approximately 10 blue-collar and 4 white-collar positions. These positions would be located elsewhere within the City of San Francisco, since the present occupant of the site intends to relocate.[1]

Over 10 million gross square feet of office space is currently approved or planned for construction by 1983, and in this context, the proposed building would represent 2 percent of known office space growth.[2]

b. Construction Employment

An estimated $17.5 million (1980 dollars) would be spent on construction and interior improvements. Assuming about 40% in labor cost for the shell (about $13.1 million x 40% = $5.24 million for labor) and 50% for the interior ($4.4 million x 50% = $2.2 million) including direct wages, payroll taxes and fringe benefits, about $7.44 million would be spent on labor.[3] Assuming an annual cost, including wages, taxes and benefits, of $28,000 per construction worker, a total of 266 person-years of construction labor would be generated. Project construction would be expected to take place over about a 2-year period; therefore, average construction

---

[1]It should be noted that when new offices are constructed, employment expansion (new employment) is accommodated. New jobs do not necessarily end up in the new building. Existing businesses may relocate creating a series of shifts in a number of buildings throughout the downtown area and new businesses may locate in existing buildings as well.

[2]Ten million gross square feet of potential office space development is based on applications and records in the Department of City Planning.

[3]Cathal O'Doherty, Jorge De Quesada Architects, telephone communication, 26 August 1980.

employment would be about 130 full-time jobs at any one time during construction. Peak employment would be about 160 persons. Additional short-term employment in design, engineering, planning, environmental and legal services, and marketing also would be required.

Secondary temporary employment due to demands for goods and services by construction workers and their families and in the construction materials supply industry would be generated. These secondary jobs could be estimated on the basis of a 1 to 1-2 ratio, or 1-2 secondary jobs for every direct construction job.[1] This would be the equivalent of 266 to 532 full-time, 1-year jobs in the region.

c. Permanent Employment

The rentable space would total about 182,000 square feet. Office employment is estimated to be about 868 people.[2] It is assumed in this report that all employment would represent new jobs. Approximately 40% (347 employees) would be expected to live in San Francisco, the balance 60%, or 521 employees) would commute to the City.[3]

The tenant mix for the proposed building is not known at present. The warehouse workers employed by Schou-Gallis would be relocated to other warehouse space in San Francisco. The 4 office employees may remain in the new building.

---

[1]Various construction multipliers has been used for downtown construction projects in San Francisco ranging from 1 to 2 per 1 construction job, (e.g. Daon Building EIR, EE 79.57, 12 June 1980), Hotel Ramada EIR, EE 80.171, 29 January 1981, One Sansome, EE 78.334, Draft 10 April 1981).

[2]Assuming one office employee per 250 gross square feet and one maintenance janitor per 12,500 gross square feet.

[3]The Department of City Planning currently assumes that 40% of employees working downtown reside in San Francisco.

d. Rents

Space in the 101 Mission Street Building would be expected to rent from $25 to $30 per square foot annually.[1] Current rates for office buildings south of Market Street are in the same range per square foot and are increasing more than 15% annually.[2]

2. <u>Fiscal Revenues and Costs</u>

a. Assessed Valuation and Property Tax

Based on replacement costs as shown in Table 10, the minimum fair market value of the proposed project would be approximately $21.6 million in 1981 dollars. Assuming the property would be assessed on the basis of full replacement costs, the assessed value of the project would be $5,400,000. Total property taxes would be $216,000, at the 1% of full value allowed under Proposition 13 (or $4.00 per $100 assessed value), plus an additional levy for the repayment of existing bonds previously approved by the electorate (the current total rate for the 1980-1981 fiscal year is $4.92) which would total $205,000.

Applying the 1980-1981 property tax rate, San Francisco could receive abvout $226,000 from the project (85% of the total, composite property tax revenues would go to San Francisco). Subtracting the market value of the existing land and improvements on the project site, which total about $583,500, the net addition to the San Francisco property tax base would be about $21 million. The net increase over existing composite property tax revenues to San Francisco would be about $218,700.

b. Other Local Revenues

The project would generate new payroll, business and

---

[1]Eric Schou, Schou-Gallis, telephone communication, 26 August 1980.

[2]Rich Carcioni, sales consultant, Coldwell Banker, telephone conversation, 28 April 1981.

TABLE 10

Estimated Replacement Costs

	Millions of Dollars
Land (already owned, 1980 assessed value)	0.4
Construction cost[1]	
Shell	13.1
Interior finish[2]	4.4
Interim financing @ 15%	2.6
Leasing costs @ 6%	1.1
Total	21.6

[1]Does not include tenant improvements which would be taxed as personal property.

[2]The interim financing is included as it represents the total development cost on which the property tax is calculated.

utility user taxes which could accrue to San Francisco. Table 11, page 101, is a summary of estimated project-generated tax revenue.

Potential revenues to San Francisco could range from $356,800 to $400,800; however, this range is subject to a number of variables that could affect the estimate:

- property tax distribution could change in the ensuing years
- payroll tax could vary according to the salaries of employees in the proposed project
- rents may change, thereby affecting the gross receipts tax
- costs for utilities, particularly telephone, are also variable.
- additional fees, assessments, charges determined by the City.

In addition, there are indirect revenues that could accrue to San Francisco in the form of sales tax from items purchased by those employees at the proposed project who are filling net new jobs in San Francisco (i.e. those people who are obtaining employment in San Francisco for the first time).

c. Municipal Costs and Net Revenues

Costs to San Francisco for providing municipal services to the project are difficult to quantify. Existing services (see Chapter III.H., Community Services, page 92) nearer the site can accommodate the proposed project without additional facilities and/or manpower (assuming that the project is constructed in accordance with the required design measures). Existing public works costs for street repair, drains, lighting, and cleaning would not measurably increase. Police and fire protection costs would not increase due to the

Table 11

Estimated Project Revenues at Full Occupancy
(1981 dollars)

	Total	City/County[1]
Property Tax	$216,000 to 265,700	$184,000 to 226,000
Payroll Tax[2]	132,800	132,800
Gross Receipts Tax[3]	10,000 to 12,000	10,000 to 12,000
Utility Users Tax[4]	30,000	30,000
	$388,800 to 440,500	$356,800 to 400,800

[1]Assumes property tax distribution as in 1980-1981 which may be slightly different in the ensuing years. The San Francisco Unified School District and Community College District, Bay Air Pollution Control District and BART would also receive property tax revenues. The ranges are based on 4% (under Proposition 13) and 0.92% (based on bond payments, which will change in several years).

[2]Estimated on 60% of employee wages eligible, average annual salary of $17,000 and 1.5% tax (1981 rate).

[3]Based on net rentable space at $25 and $30 per square foot at the rate of $2.20/$1,000 of gross rental receipts.

[4]Water. The estimated annual water bill for the completed project is $13,400 (851,900 cubic feet/ year @ 41.4¢/100 cubic feet, plus $1.15 sewer service charge/100 cubic feet). Tax @ 5% = $670.00.

PG&E. The total annual PG&E bill is estimated at $116,000: $92,500 for electricity (@4.5¢/kwh) and $23,700 for gas (@29¢/therm). Totals based on annual consumption figures projected in Section III.G, Energy Impacts. Tax @ 5% = $5,800.00.

Pacific Telephone. The estimated annual telephone bill is $422,000, a figure which would vary considerably with the type of office tenant. This estimate assumes a monthly telephone bill of $1,000/5,000 leasable square feet. Tax @ 5.5% = $23,200.00.

Total Utility Tax = $30,000.00.

proposed project.[1] Cumulative impacts of other proposed projects, however, could increase the costs of police and fire services to the downtown area. User charges for water and sewer would cover the cost for provision of such services.[2]

Cost increases would be expected for MUNI, SamTrans, BART and Golden Gate Transit. Capacity increases are based on the anticipated revenues projected by the transit districts (see Chapter III.C., Transportation, page 70 and IV.C., Transportation, page 111). Golden Gate Transit plans no capacity increases and available revenues for increased capacities are not assured for other Transit Districts. However, it should be noted that on 5 May 1981, the mayor signed into law a plan to charge owners of downtown commercial property in the City special fees to help fund MUNI.[3] Under the plan, the City would levy a one-time fee of $5 per square foot for construction of new office space and also collect an annual "transit impact development fee" on office buildings within a yet-to-be created downtown assessment district.

The General Fund subsidy to MUNI's operating budget is about $0.235 per trip.[4] The project would create the

---

[1]Captain Eugene Calamoneri, San Francisco Fire Department, Division of Planning and Research, telephone conversation, 18 August 1980. Officer John Parenti, San Francisco Police Department, South Station, telephone conversation, 18 August 1980.

[2]The San Francisco water and sewer service operates as a "closed" system financially. Rates are set to allow the system to function on a self-supporting basis. Source: Jack Kenck, manager, San Francisco Water Department, City Distribution Division, telephone communication, 11 May 1981. Nathan Lee, San Francisco, Clean Water Program, telephone communication, 11 May 1981.

[3]Ordinance #224-81.

[4]B. Bernhard, Transportation Economist, Public Utilities Commission, City and County of San Francisco, Memorandum on Transit Development Fee Cost Analysis, 9 July 1980, "Table 2, Marginal Cost Computation". This memorandum is on file and available for public review at the Department of City Planning, Office of Environmental Review, 45 Hyde Street.

need for a general fund subsidy to MUNI of approximately $50,000.[1]

The current passenger deficit to BART per ride is about $0.97.[2] If this deficit continued to be incurred, the proposed project would increase the total deficit annually by approximately $109,000.[3]

In the context of cumulative downtown employment growth, a cumulative fiscal impact on MUNI and other City-provided services could occur. It would be expected that the project revenues to San Francisco would exceed the incremental cost directly attributable to the project in the short term.[4] The increases in property tax limited by Proposition 13 may not offset the inflationary costs in municipal services in the long term, but other factors such as user fees, special assessments (with voter approval) etc. could sustain a positive net cost/revenue ratio to the City.

---

[1]895 MUNI rides per day x $0.235 per ride x 240 days per year = $50,000. This amount could be offset by the proposed Transit Impact Fee which the proposed project could generate a one time fee of $1,110,000 to the City ($5 per square feet x 220,000 square feet).

[2]Mark Birkenthal, Transit Analyst, Bay Area Rapid Transit District, telephone conversation, 30 April 1981.

[3]470 Bart rides per day x $0.97 per ride x 240 days per year = $109,000

[4]The issue of development in Downtown San Francisco and the extent to which associated costs/benefits can be quantified is contingent on the limited data available and the assumptions made in such an analysis. Several studies on the costs/benefits of downtown highrises have made different conclusions. The Sedway/Cooke, Downtown San Francisco Conservation and Development Planning Program Phase I Study, October 1979, suggested that cumulative fiscal impacts could result in overall incremental costs exceeding incremental revenues. The Arthur Anderson & Company, Downtown Highrise District Cost-Revenue Study, November 1980, and the Gruen + Gruen Associates, Fiscal Impacts of New Downtown Highrises on the City and County of San Francisco, March 1981, indicated that total revenues from Downtown may exceed total costs.

J. HISTORICAL

According to a reference document on the San Francisco Waterfront,[1] early fill in the area of Yerba Buena Cove during the post-Gold Rush period has not been found historically valuable except for the sunken hulks contained in the fill, some of which have been identified by the San Francisco Maritime Museum. There is a map contained in the reference library of the Maritime Museum titled Gold Rush Vessels Beached, Scuttled or Broken Up, which was prepared through archival research around 1964 by Karl Kortum, Museum Curator, and staff members Harlan Soetan and Alfred Harmen.[2] Inspection of the map shows that most buried hulks are located in the vicinity of Telegraph Hill, and that others are known to exist along the waterfront. A hulk labeled "Supply Ship" is shown with the stern located under the intersection of Mission and Main Streets and the bow pointing slightly to the west further north on Main Street just past the intersection. No buried hulk is shown to be located on the project site or the block.

About 6 feet of excavation below the existing basement floor would be required to construct the new building.
based on the existing record. It is not possible, based on the existing record, to rule out the possibility of encountering historical resources or a buried hulk (or a portion thereof) during excavation for the proposed structure.

The California Archaeological Site Survey's regional office for the Central Coast Counties at Cabrillo College has

---

[1]Roger and Nancy Olmsted, The San Francisco Waterfront: Report on Historical Cultural Resources, prepared for Wastewater Management, December 1977.

[2]The map is currently being prepared for publishing, although a publication date has not yet been set. Copyright: San Francisco Maritime Museum. Source: Justine Shultz, Museum Librarian, telephone communication, 29 April 1981. The map has not been revised since 1964, and ships not shown on the map have been discovered during excavation for other buildings.

indicated that the 101 Mission project site is within one-quarter mile of known historic and prehistoric sites.[1]

K. GROWTH INDUCEMENTS

The project would add about 219,350 gross square feet of office and commercial space to the downtown supply. The new office space would be available for relocation or expansion of other San Francisco Firms, for firms relocating from outside San Francisco, or for newly forming firms.

A total of about 700-900 employees could ultimately be located in the new building (see Section III.I., Economics, page 95). To the extent that the project would attract new residents or commuters who would not otherwise be attracted to San Francisco or the Bay Area, it may be viewed as employment-generating and growth-inducing, and would result in a variety of indirect growth effects. The effects would include additional demand for about 189 dwelling units[2], demands for a variety of commercial, social, medical and municipal services, and secondary demands on streets, freeways and transit systems.

While project-associated impacts of the type described would be of an incremental nature, there would be long-term cumulative impacts resulting from many such projects. These

---

[1]Letter to Sally B. Woodbridge, Architectural Historian, from California Archaeological Site Survey Regional Office, Central Coast Counties, 7 August 1980.

[2]Net new office employment in San Francisco resulting from a particular project is difficult to determine. In this report, the effects have been analyzed as gross impacts; that is, the future with the project is compared directly to the present without the project. For example, it is estimated that from 40-50 percent of downtown office employees reside in the City. Under this assumption, because of the proposed project, about 189 households in the City would be created, calculated as follows: approximately 213,000 gross square feet of office space ÷ 250 square feet per employee = 852 employees x 40 percent (those who would reside in San Francisco) = 340 employees ÷ 1.8 (av. no. of employed persons per downtown San Francisco household) = 189 dwelling units. Source: Pacific III *Final EIR*, EE 80.315, Certified 2/26/81; Five Fremont Center *Final EIR*, EE 80.268, Certified 3/12/81.

cumulative impacts are investigated as part of a downtown development study which is primarily concerned with the effects of replacing existing buildings with new construction and with construction on vacant lots.[1] The study noted that:

> "Recent analyses of (land) capacity and demand indicate that there are sufficient buildable sites available in Downtown to accommodate estimated long-term growth. This added consumption of land has obvious housing, landmark preservation and transportation implications...[2] The areas most likely to be affected by the increase in land demand are the Tenderloin and mid-Market (Fifth to Eighth Streets), because as the number of available sites in the C-3-0 area declines, growth would be channeled to these areas."[3]
>
> The report also notes: "Continued growth in Downtown employment will have a major impact on Citywide and Downtown housing. If assumptions in recent EIRs prepared for Downtown office development are correct, there will be 31,000 more Downtown employees living in San Francisco by 1985, and 30,000 more by 2,000. (These figures assume that 40 percent of new employees would reside in San Francisco.) This roughly translates into an increased demand for 17,200 housing units in the City by 1985 and another 16,700 by 2,000. The demand would have to be met by displacement of existing residents not employed in Downtown, by the construction of new housing units in the City, and by a shift in employment of residents from outside to inside Downtown."[4]

---

[1]Sedway/Cooke, Downtown San Francisco Conservation and Development Planning Program, Phase I, 1979. (Note that discussion indicates only general findings of this document: for more details the reader is referred to pages 7, 23, 31, 47 and 48 of the Sedway/Cooke report).

[2]Sedway/Cooke, Downtown San Francisco Conservation and Development Planning Program, Phase I, 1979, page 21.

[3]Sedway/Cooke, op. cit., page 24.

[4]Sedway/Cooke, op. cit., page 47-48.

"In sum, the total (Downtown) land supply assumed in this report is approximately 168 acres. There are 33 additional acres within the Yerba Buena Center project area. Under current C-3 zoning system, up to 95 million gross square feet of building floor space can be built within the C-3 zone."[1]

The project would occur in an already developed downtown urban setting, and in itself would require no new construction or extension of public service or utility systems. It would, therefore, not require infrastructural improvements that would open or intensify development opportunities that do not already exist.

The project would continue the trend of intensifying office uses in the downtown, specifically south of Market Street.

Together with other new office development near the site, it could stimulate further office growth in the immediate vicinity, on lots now used for parking or in low-rise structures containing businesses and light industrial uses (such as warehousing). Employee purchasing power could stimulate employee-oriented retail activity in the vicinity of the project site.

---

[1]Sedway/Cooke, Downtown San Francisco Conservation and Development Planning Program, Phase I, 1979, page 11.

IV. MITIGATION

A. VISUAL QUALITY AND URBAN DESIGN

In addition to granite surface paving, visual interest to pedestrians would be improved through the use of street trees around the building. Street trees would also serve to improve the scale relationship between the pedestrian environment and mass of the building. Continuity in a street tree theme on the block would be assured if trees of the 101 Mission project were to be of the same species previously installed on Spear and Howard Streets. Architects for the project have indicated that street trees would be provided around the building.[1]

In addition, emphasis on the use of brick would relate visually to other existing structures on the block, including the Borel building and Howard and Main office building (see Figure 12, page 29). Constructing a "pedestal" (broader building base) at the lower 3 to 4 floors with upper floors placed inward from the edge of the pedestal would define a lower building height next to the street reflecting the bulk and height of adjacent older structures. Detailing the facade of the pedestal similar to adjacent older buildings would provide a continuity in design along the street frontage. However, the above measures have been rejected by the project sponsor because older structures are being removed to make way for new high-rise buildings,[2] and it is the project sponsor's desire that the design of the

---

[1]Cathal O'Doherty, Jorge De Quesada, Inc., Architects, telephone communication, 25 August 1980.

[2]The reader is referred to the discussion on page 62 relating to Major New Development Policy 6 of the Urban Design Plan, Section III.B., Environmental Impacts, Visual Quality and Urban Design.

building visually relate to what he considers to be the majority of buildings in the area through a simpler treatment of exterior building design.

The use of square building corners has been rejected by the project's architects in favor of rounded building corners to avoid a rigid or stiff building appearance. The project's architects believe that older buildings along Mission Street on the block will be removed in the future to allow construction of new high-rise buildings, and that new building and pedestrian open space design would be coordinated with the proposed 101 Mission Street project for compatibility in design appearance.

B. TRANSPORTATION

Although the proposed project would not measurably impact the transportation system, the cumulative trip generation of other committed downtown development would cause impacts on the transportation system. Although it is beyond the ability of any one development to solve the problems of downtown traffic and transit congestion and parking resources, individual developments can pursue certain mitigation measures privately and eventually participate collectively in a large-scale program to improve the downtown transportation system. The City has recognized the potential role of new development in alleviating transportation system impacts and has suggested some basic mitigation strategies.[1] The following 4 mitigation measures would be implemented in conjunction with the proposed project:

1. The project sponsor recognizes the need for expanded transportation services to meet the peak demand generated by cumulative office development in downtown San Francisco, to which this project would add; therefore, the project sponsor would contribute funds for maintaining and augmenting transportation

---

[1]San Francisco Department of City Planning, Guidelines for Environmental Evaluation - Transportation Impacts, 3 July 1980.

service, in an amount proportionate to the demand created by the project through an equitable funding mechanism such as an assessment district, to be developed by the City.

2. The project sponsor would encourage transit use by employees in the proposed building by means including the sale on-site of BART and MUNI passes, and promoting an employee carpool/vanpool system in cooperation with RIDES for Bay Area Commuters, or other such enterprises.

3. Upon completion of the project, the project sponsor would, in consultation with the Department of City Planning, promote a flexible time system for employee working hours and a preferential parking program for carpools and vanpools to reduce peaks of congestion in the transportation system. A portion of the basement area would be made available for parking up to 2 handicapped and/or van pool vehicles.

4. Within a year from completion of the project, the project sponsor would conduct a survey in accordance with methodology approved by the Department of City Planning, to assess actual trip generation patterns of project occupants, and actual pick-up and drop-off areas for carpoolers and vanpoolers. This survey would be made available to the Department of City Planning. Alternatively, at the request of the Department of City Planning, the project sponsor would provide an in-lieu contribution for an overall survey of the downtown area to be conducted by the City.

In addition, the project sponsor would participate in a future areawide study of current parking conditions and future needs. If new short-term or long-term parking is appropriate in the downtown area, the project sponsor would participate in the equitable funding of such facilities through a special assessment district according to criteria determined by the study. Parking for bicycles would be provided in the basement of the building.

With respect to construction impacts, the project sponsor would ensure that safe and convenient pedestrian access be maintained throughout the construction period on designated walkways around the project site. The delivery of equipment, materials, etc. would be assigned to Spear Street and prohibited during the peak traffic flow periods.

To reduce the potential for mid-block pedestrian crossing of Mission Street, the project sponsor proposes an architectural barrier fabricated of metal and/or wood. The barrier would extend along the curbline from the building's entry on Misson Street, west about 15 feet beyond the edge of the walkway. This would require the removal of 1 parking meter at the project's west property line, and the creation of a no parking (red) zone along the barrier. The barrier would be intended to divert pedestrians to corner crosswalks at Spear Street and Main Street,[1] and would require approval by the Department of Public Works.

For pedestrian safety, the project sponsor proposes a bell or buzzer which would sound when vehicles leave the site at the building's southeast corner. This would contribute to instantaneous noise levels.

C. NOISE

1. Compatibility with the Existing Noise Environment

San Francisco has adopted guidelines for determining compatibility of various land uses with different noise environments. For offices the guidelines state that in an exterior noise environment of 70-75 Ldn "new construction or development should be undertaken only after detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design."[2]

In accordance with the suggestions in the Transportation Noise Element of the Comprehensive Plan of the City and County of

---

[1]See Section VI.D., page 125, Alternative Designs for additional discussion regarding the pedestrian walkway along the west face of the building.

[2]San Francisco Department of City Planning, Environmental Protection Plan, adopted by Resolution 7244, 19 September 1974 of the San Francisco City Planning Commission.

San Francisco, a detailed analysis of the noise reduction requirements of the proposed building would be made and needed noise insulation features included in the final design.

2. Effects on Adjacent Land Uses

San Francisco's Noise Ordinance limits the amount of noise mechanical equipment can emit.[1] The Noise Ordinance requires that noise from the mechanical equipment at the proposed building not exceed 60 dBA at the property line of the property affected by the noise emisisons. This level would be at or below the existing background noise level in the vicinity of the site and no increase in noise levels due to mechanical equipment would be expected. The project would conform to the Noise Ordinance requirements.

3. Construction Noise Impacts

Construction equipment used by the project would also conform to the Noise Ordinance, which requires that all powered construction equipment (except impact tools and equipment) not emit more than 80 dBA when measured at a distance of 100 feet. Impact tools and equipment including pavement breakers, jackhammers, and piledrivers must have both their intake and exhaust muffled to the satisfaction of the Director of Public Works. The ordinance further requires a special permit for construction after 8 p.m. and before 7 a.m.

To mitigate piledriving noise impact, San Francisco in the past has issued special permits to require piledriving to take place when the least number of people would be impacted. For the project site, this would be after office hours (5:30 p.m.) in the adjacent buildings and on weekends. The project sponsor has agreed to apply to the Department of Public Works for permission to do pile driving after office hours and on weekends, if necessary. Piledriving would not occur after midnight when background traffic noise levels would decrease to the level at which piledriving noise would become intrusive to occupants of the Hyatt Regency Hotel at Market and Drumm Streets.

---

[1] City Ordinance No. 274-72, Regulation of Noise, adopted 10 August 1973.

In addition to restricting the hours of operation, the City has employed another mitigation measure which has minimized piledriving noise impacts: predrilling the pile holes to minimize the depth through which the piles would have to be driven. This minimizes the number of blows per pile and therefore the number of noise-generating impacts, and also keeps the pile hammer closer to the ground where shielding due to adjacent buildings is more effective. However, the project's architects specify that the piles that would be used for the project would be "friction" piles (support of the piles would be provided by the sand and alluvium material in contact with the piles), and predrilling pile holes would allow the piles to sink. Therefore, predrilling pile holes would not be provided as a noise mitigation measure[1].

The project sponsor and construction contractor would meet with management and employee representatives of adjacent buildings to inform them of the construction schedule, when noisy construction equipment would be used and when piledriving would occur. This would enable these businesses to plan working hours, vacations, and temporary office furniture rearrangements accordingly. Adjacent offices with computers would receive notice of piledriving hours due to potential ground vibration.

A wood construction barrier around the project site along Mission and Spear Streets would be installed and would be effective in mitigating noise levels by up to 15 dBA at the lower floors of nearby buildings. Upper floors would not be shielded by the construction barrier.

D. CLIMATE AND AIR QUALITY

1. Climate

The extent of shadows cast on the Mission and Spear Streets intersection could be reduced by lowering the

---

[1]Jorge de Quesada, Inc., Architects, telephone communication to Cathal O'Doherty, project architect, 27 April 1981.

building, changing the building's size and shape, or stepping the height of the building back from the intersection. These design features would reduce the interior square footage of the building. The project sponsor feels the size of the structure as proposed is economically the most viable in terms of space leasing and has not committed to the above mitigation.

2. Air Quality

The project's location in the San Francisco downtown area can be viewed as an asset for regional air quality. The combination of transit access from the San Francisco Municipal Railway, BART, AC Transit, SamTrans and Golden Gate buses results in an estimated 65% non-auto transportation split. The other 35% of the trips made by automobile would add to already heavy traffic volumes in the area.

The measures discussed in Chapter IV.C. Transportation Mitigation, Page 111, would also mitigate air quality impacts. These measures would include car-pooling, van-pooling, and staggered work hours.

Watering to control dust on-site during construction would be done by the project sponsor. The San Francisco Building Code requires that measures be taken to reduce dust generation, specifically, watering down demolition materials and soils. An effective watering program (complete coverage twice daily) can reduce emissions by about 50%; the project sponsor would require the contractor to implement a twice daily watering program, which would reduce the likelihood of airborne construction dust and particulates exceeding State and Federal standrards.

E. SOILS AND SEISMICITY

1. Soils

Further geotechnical engineering investigations including test borings would be done to determine soil characteristics and thickness, to recommend foundation pile-bearing length and pile-tip elevation; to predict expected settlement and possible differential settlement; and to determine whether dewatering were necessary and safe relative to adjacent structures. Results and conclusions of these technical studies would be taken into account in design plans for the proposed building.

Streets would be swept to prevent siltation of storm drains. Soils and demolition debris would be contained on-site for later transportation to dumps.

2. Seismicity

The structures would be designed to meet the seismic design standards of the San Francisco Building Code, or the more stringent seismic standards of the Uniform Building Code (UBC) or the Structural Engineers Association of California (SEAOC). The latter design standards relate structural design to the maximum probable earthquake in the region, an 8.3 Richter magnitude event along the San Andreas Fault. The elasticity of the structure would be designed according to SEAOC recommended maximum allowable sway. Computer analysis of the structural frame would be performed in order to design the seismic constraint of the structural frame. Such a design approach would help to minimize damage in a moderate earthquake (magnitude 5.0 to 6.0), and prevent collapse under the maximum probable earthquake. Glass and masonry panels would still present a hazard by potentially cracking and falling.

To reduce seismic hazard, nonstructural elements such as hanging light fixtures, hung ceilings, wall partitions, bookcases and mechanical equipment would be firmly attached to prevent their falling during an earthquake, as required by the San Francisco Building Code. Emergency procedures would be posted.

F. ENERGY

New non-residential construction initiated after July 1978 is required to comply with Title 24, Division 20, Article 2 of the California Administrative Code regarding Energy Conservation Standards for new non-residential buildings. Designed to help reduce energy consumption in California, these regulations set forth design criteria for buildings and stipulate maximum allowable energy consumption figures. Under the present law, the project sponsor would have to conform with these standards.

Title 24 regulations set a maximum allowable energy consumption for non-residential buildings with an occupancy of over 300 persons of 126,000 BTU per gross square foot of heated and cooled floor space per year[1]. If design features described earlier (Section III.G., page 91) are incorporated into the building, the total annual energy consumption for the building would be under the maximum allowed 126,000 BTU per gross square foot of heated and cooled floor space.

The project sponsor intends to incorporate the features described in the energy impact section (page 87) in the building. These represent major design factors that would conserve energy consumption by the structure. In addition, other, smaller design features can be incorporated into the structure that would further reduce energy consumption. Some examples include:

- Dual-level lighting controls to permit lighting levels to be reduced by 50% during periods when higher illumination levels are not required.
- Recessed fluorescent lighting fixtures with heat extract capability to increase lighting efficiency and reduce the amount of heat transmitted to the office space.
- Provision of optimum thickness of insulation for duct-work, piping and equipment.
- Devices in washrooms to limit water outlet temperatures to 110 degrees Fahrenheit.

The project sponsor has not determined that these features would be incorporated in the building, but would investigate the feasibility of using them in view of the requirements of Title 24.

---

[1]California Energy Commission, Conservation Division, Regulations Establishing Energy Conservation Standards for New Residential and New Non-residential Buildings as Amended July 26, 1978, Sacramento, 1978, Table 2-1.

G. COMMUNITY SERVICES

1. Police

Internal security measures that would be incorporated into the building would include 24-hour illumination of the ground floor lobby remote TV and a security guard during regular business hours and late evenings. All mechanical systems would be monitored and inspected on a routine basis to ensure employee safety.

2. Fire

Self-contained fire and life-safety systems consisting of water pumps, sprinklers, alarms and smoke removal systems would be provided as required by the San Francisco Building Code.

3. Telephone Services

The project sponsor would require the building contractor to provide safe, alternative pedestrian and vehicular routes during the installation of underground telephone lines.

H. HISTORICAL

If historical artifacts are discovered during construction of the proposed project, the contractor would stop work in the area of the find to permit professional evaluation of the find. The Office of Environmental Review, the President of the Landmarks Preservation Advisory Board, the Director of the Maritime Museum in San Francisco, and the Regional Archaeological Site Survey Office at Cabrillo College at Aptos, California would be notified. Any artifacts found would become the property of the project sponsor. The Office of Environmental Review would recommend mitigation measures if necessary. All recommendations would be sent to the State Office of Historic Preservation. Construction that may be damaging to historical resources discovered would be suspended for a maximum of 4 weeks to permit inspection, recommendation and retrieval (if appropriate). If artifacts are discovered, some would be displayed in the maritime display area proposed for the building's ground level.

If portions of a potentially historic ship are discovered during excavation, in addition to the above measures, a qualified archaeologist would be hired by the project sponsor to inspect and preserve portions or all of the ship remains, either intact or by photographic record. Construction would be suspended for up to 4 weeks to allow archaeologic work to take place. A 6 week work stoppage would not be acceptable to the project sponsor because of increased construction costs and anticipated conflicts in materials fabrication schedules (steel framework, pre-cast spandrels) and delivery.

CHAPTER V
UNAVOIDABLE ADVERSE IMPACTS

A. TRANSPORTATION

With freeways and freeway ramps currently operating under congested conditions during peak hours, the traffic increases generated by cumulative downtown development including the proposed project would add to this congestion with the likely result that travel delays would be extended.

MUNI lines with load factors projected to be greater than 1.00 would be experiencing congestion due to ridership from the proposed project in combination with other downtown development.

The project would require approximately 218 long-term spaces and 82 short-term spaces. It is likely that parking would shift further from downtown with increased demand south of Folsom Street and beyond.

B. CLIMATE

Shadows from the proposed building would affect sidewalk areas of the Mission and Spear Street intersection in all seasons at midday.

C. SOILS AND SEISMICITY

If a severe earthquake, such as the 1906 San Francisco earthquake of estimated Richter magnitude 8.3, were to occur along the San Andreas Fault in the Bay Area, violent groundshaking would occur. Groundshaking at the site would be expected to be of high intensity due to wave amplification in soft, unconsolidated soil which could have such effects as cracking building walls and permanent deformation of structural members.

D. ENERGY

Assuming a 50-year lifetime for the building, the estimated lifetime energy cost (includes construction, operation, transportation and removal) would be 3.5 trillion BTU. This is equivalent to approximately 660,000 barrels of crude oil.

CHAPTER VI
ALTERNATIVES TO THE PROPOSED PROJECT

A. NO PROJECT ALTERNATIVE

If the proposed project is not constructed, current use of the site as a warehouse with offices would exist for an unspecified period of time. With the retention of the site in its current use, none of the identified impacts associated with the proposed project would be exerted on the downtown area.

The no-project alternative would hold open future options for the land to be developed under other development scenarios (see VI. A.2 below). Deferment of development could also give time for the existing zoning code to be amended affecting the ultimate build-out potential of the site.

B. ALTERNATIVE SITE USES

Under the C-3-0 zoning, other possible site uses include dwellings, hotels, business services, and sales (see Section I.D., Zoning and Required Approvals). Hotel and retail business use of the site would generate trips at a higher rate on a daily basis than office space and it would be likely that larger impacts on traffic, transit, pedestrian flow, and noise would occur for such a project of equal size to the proposed project. However, because the site is located at the fringe of the Central Business District, it is unlikely that the site would be intensively developed for either of these purposes in the near future.

A wholesaling operation of greater intensity than the existing one would be a less intensive use of the site than the proposed project, it would have less impact on automobile traffic, transit and pedestrians. Truck traffic, however, would increase. Tax revenues would likely be less than for the proposed project, as would employment, and less municipal expenditures would be required while cumulative, indirect housing impacts would be reduced. Some blue collar employment would directly be created by wholesaling use of the site.

If the site were developed as a commercial parking garage, total trip generation would be less than the project as proposed and impacts on transit would be less. However, the number of vehicular trips ending and originating at the site would be greater, in turn increasing impacts on traffic conditions, the noise environment and air quality in the immediately adjacent area.

Developing the site for residential purposes would help to ameliorate the housing demand in San Francisco (the extent would depend on the type of housing available, i.e., whether it would be intended for low and moderate income people, a mix, or luxury apartment condominiums).

Trip generation due to residential use of the site would likely be lower than the project as proposed because fewer individuals would enter and leave the site on a daily basis. This would vary, depending on the size of the residential development and number of dwelling units constructed. Peak-hour trips would be outbound in the morning and inbound in the evening, in reverse to those for the proposed project and for the Central Business District in general. Traffic impacts would be expected to be less, while pedestrian and transit impacts would be either greater or less, depending on where the majority of residents would travel to work. Parking demands for residential use would, again, vary depending upon the type of unit. It is likely that parking demands could increase in other areas, given the location of the project and the absence of residential neighborhood amenities such as food stores, entertainment facilities, restaurants available for evening meals, etc.

Revenues generated to the City from residential use of the site could be less than those accruing from office use as no payroll tax would be levied (except for personnel provding services to the residential units). Property tax may be higher than for the proposed project depending on the size of the residential development and the relative rates of ownership turnover. Utility users tax would also be greater than for the proposed project due to the increased consumption of water, gas and electricity (telephone use may be more for an office building). Demands on municipal services would be greater than for the proposed project, particularly recreational and police protection. Indirect revenues related to residents spending money for goods and services (sales tax) and non-local subventions on a per capita basis would be greater for residential use than for the proposed project.

C. MIXED USE ALTERNATIVE

Under existing C-3-0 zoning, the maximum number of residential units permitted on the site would be about 100.[1] The number of dwelling units to be filled in San Francisco by employees who would work in the building as proposed is computed to be 189 (see Section III.K., Growth Inducements on page 104). An office building containing about 112,400 gross square feet of area would theoretically produce a demand for 100 San Francisco dwelling units. A mixed use office and housing project would therefore appear to be a possibility on the project site. This alternative structure would therefore contain about 112,400 gross square feet of office space and 100 dwelling units averaging 1,076 gross square feet, which would yield a structure about the size of the building as proposed.

---

[1]City and County of San Francisco, Planning Code, Section 215. Calculated at a site area of 12,605 S.F. ÷ 125 S.F./dwelling unit = 101 units.

However, the project sponsor notes that 1:1 parking for the residential portion of the project would be required to secure construction and residential financing, which in turn would require about 5 floors of underground parking at the ratio of about 20 parking spaces per floor.[1] The project sponsor feels that the cost of constructing such underground parking would cause the cost of housing to rise beyond the ability of prospective buyers to purchase the residential units. The presence of groundwater in the area at 8 to 10 feet below the ground surface indicates that the project site would probably require dewatering.

If one parking space were provided for every 4 dwelling units, one basement level would be required in addition to the basement level proposed. At a construction cost of about $75 per square foot of space, this additional basement level would require $747,000, or $7,470 per unit.

The project sponsor also notes there would be no room for laundry facilities and other housing amenities, and that an additional bank of elevators would be required to serve the housing, creating a total of 2 elevator banks (1 for office use and 1 for the housing), ultimately reducing interior square footages to the point at which a mixed use project would not be financially practical. The project sponsor feels that a project site of approximately 16,000 to 18,000 square feet would be required for the mixed use alternative, which would be about 4,000 to 6,000 square feet larger than the project site. Therefore, housing on the site is not proposed by the project sponsor.

D. DEVELOPMENT UNDER INTERIM BONUS CONTROLS

Current controls for the C-3 zoning districts impose limitations on FAR bonus provisions for all future development except "grandfathered" projects specifically exempted from such controls by previous action by the Board of Supervisors. This project was one of those exempted.

---

[1]Current zoning in the C-3 districts requires one off-street parking space for every 4 dwelling units.

In terms of the interim control, bonuses may be permitted only by Conditional Use authorization pursuant to Section 303 of the San Francisco Planning Code and then only for hotel and residential use. Thus, any other development proposals are limited to basic FAR requirements.

The basic FAR for the site is 14:1. Development of the project site would allow an additional 176,464.7 square feet, calculated as shown below:

FAR CALCULATIONS

Site Area[1]	12,604.62 sq. ft.
14:1 FAR	176,464.68 sq. ft.

Assuming a site plan similar to the proposed project, and about 11,000 square feet of space per floor, a 16-story building may be constructed. The building would be 208 feet in height, assuming 13 feet vertically for each floor (as is the case with the proposed project). The building would be 61 feet lower than the structure as proposed. Discretionary review criteria applying to this alternative would be the same as those applying to the proposed project (see Section I.D., page 20).

If a smaller office building were constructed on the site, the impacts identified for the proposed project would be proportionately less, particularly in the areas of traffic, transit, pedestrian flow and energy consumption. Due to economic concerns, a shorter building is not being considered by the project sponsor.

E. ALTERNATIVE DESIGN

1. Different Exterior Shape

An alternative building design prepared by the project architects included the bonuses provided for the project as proposed and addressed the exterior shape of the building,

---

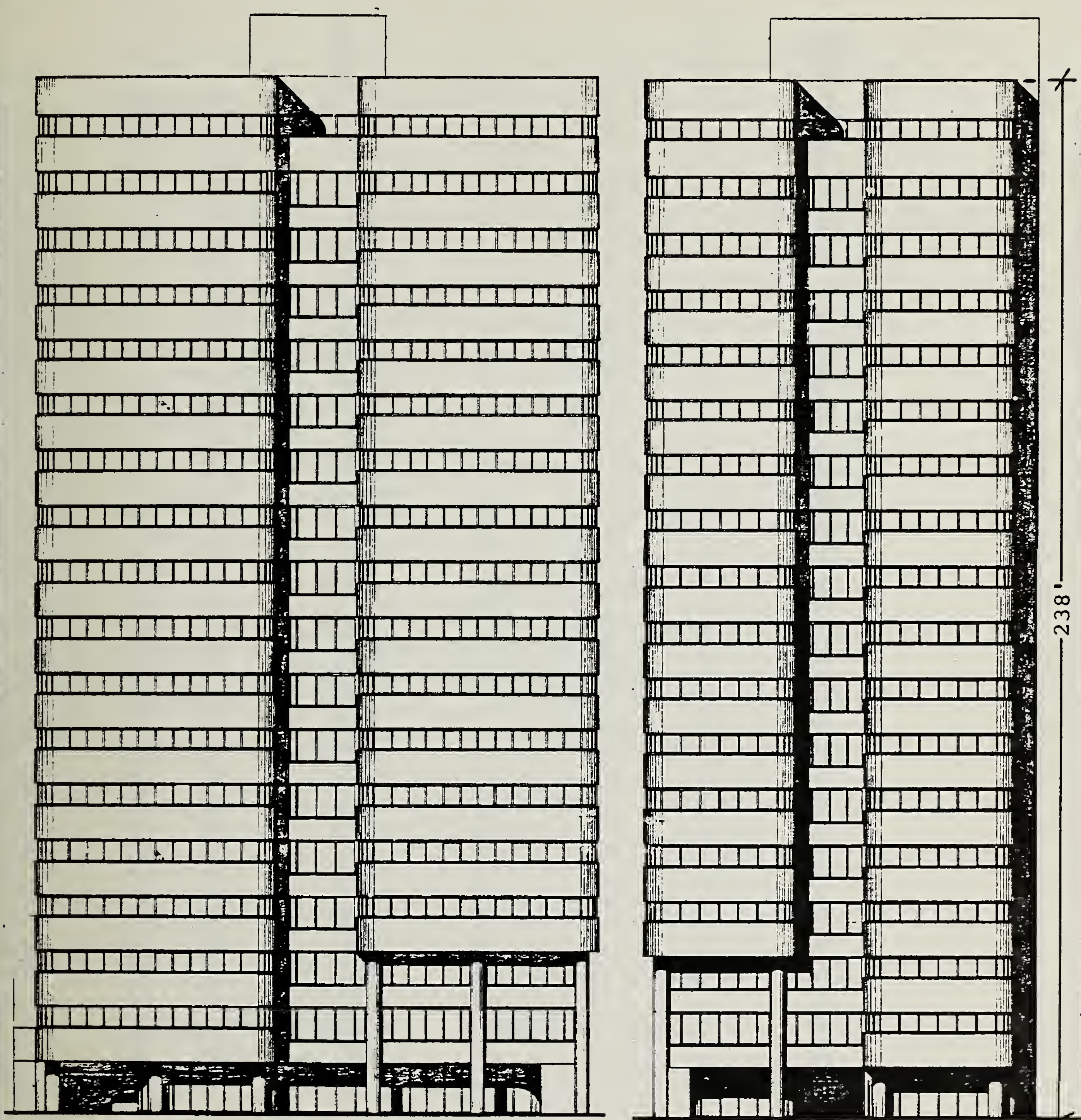
[1]Assessor's Block 3717, Lot 1.

window placement, exterior building materials and the location of pedestrian access points (see Figures 21 and 22). The alternative design was rejected in favor of the proposed design that provides greater sidewalk widths and more clearly defines the base, column and top of the structure. The selected design proposed represents to the project architects and sponsor a combination of design features that is most aesthetically appropriate and the arrangement of internal building spaces and use functions of greatest efficiency.

2. Building With No Walkway Along West Side

Another alternative building design would remove the pedestrian walkway along the building's west side. As noted in Section III.C., Transportation Impacts, page 65, the walkway could encourage jaywalking to the north side of Mission Street opposite the walkway's north end. In lieu of the aritectural barrier suggested as mitigation (see Section IV.B., Transportation Mitigation, page 109), an alternative would be to eliminate the walkway by expanding the shops on the west side of the building 13 feet 6 inches to the west properly line. This would provide an increase of about 1,050 gross square feet of commercial space on the ground floor. The expansion would require pedestrians exiting or entering the building at the southwest corner to pass through the lobby and utilize the doorways near the intersection of Mission and Spear Streets. Outdoor, through-block pedestrian access up to the southwest corner of the building would still be maintained. Removing the west pedestrian walkway from the project would not preclude the possibility of a proposal for a project on the adjacent parcel including a walkway or plaza extending to Mission Street to complete the block's internal walking system.

Constructing the ground floor wall along the west property line would require extending the lower face of the building 5 feet 6 inches beyond the building's west face. This is because the building is proposed to be set back from the west property line. Such an extension would be visually

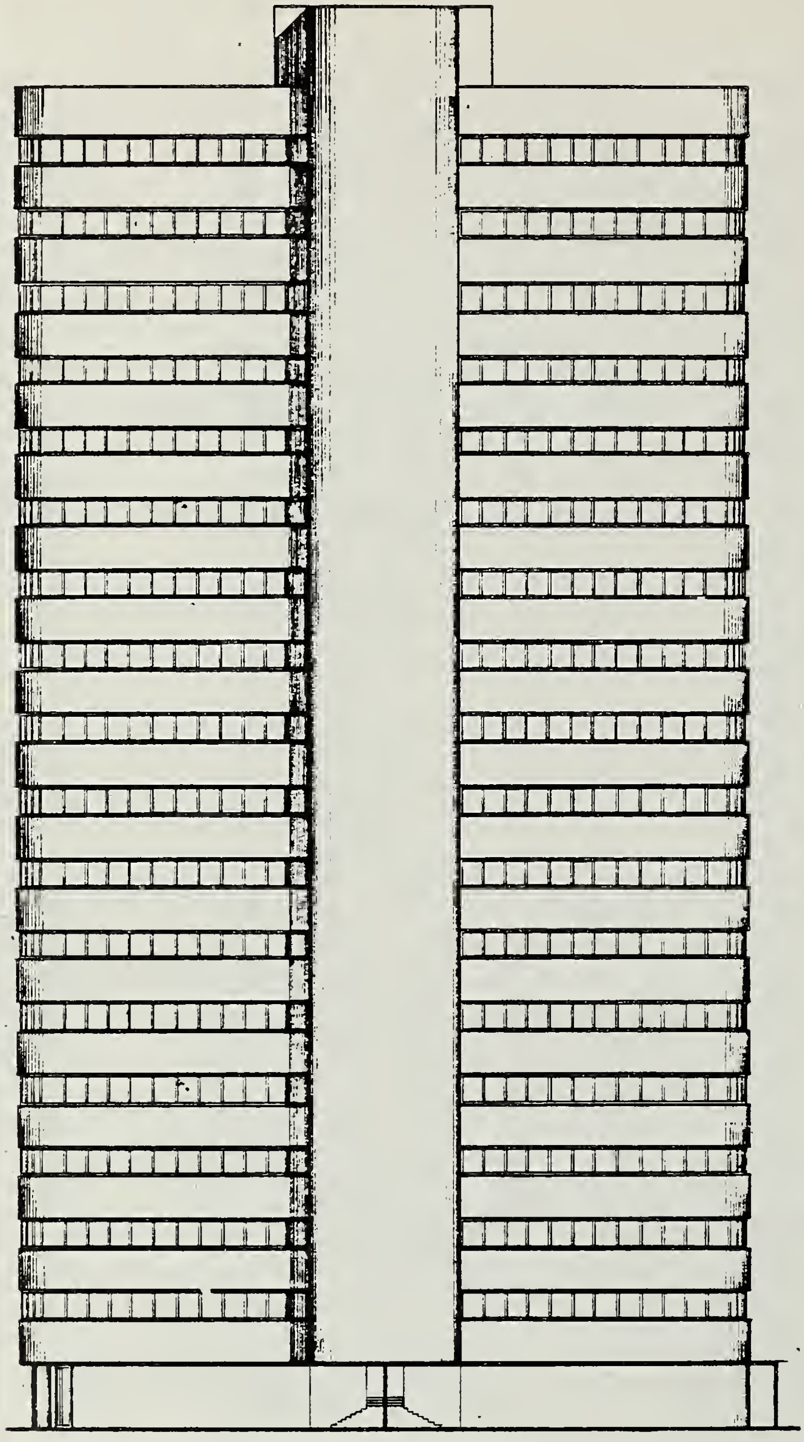


Spear St. Elevation

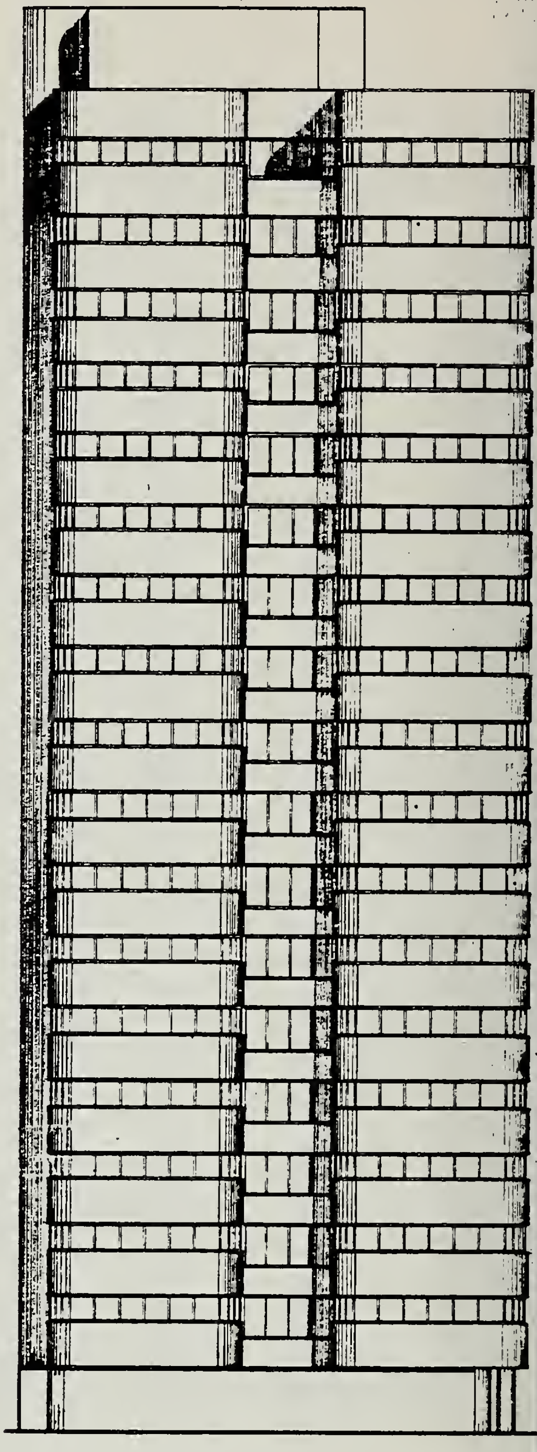
Mission St. Elevation

Alternative Design Building Elevations
(Different Exterior Shape)

Figure No. 21



West Elevation



South Elevation

Alternative Design Building Elevations

(Different Exterior Shape)

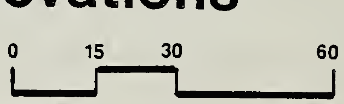


Figure No. 22

unrelated to remaining portions of the 2 lower floors, which would be stepped in from the building faces, defining the building's base. For this reason, and because pedestrian traffic not having the building as a destination point would be required to proceed through the structure, the project sponsor rejects this alternative design feature. The project sponsor feels the proposed architectural barrier would be sufficient to control potential jaywalking across Mission Street (see Section IV.B., Transportation Mitigation, page 109).

VII. EIR AUTHORS AND PERSONS CONSULTED

A. PROPOSED PROJECT AND EIR

Author of Environmental Impact Report
San Francisco Department of City Planning
45 Hyde Street
San Francisco, California 94102
Project Coordinator: Paul Rosetter
Assistant Environmental Review Officer: Barbara Sahm
(415) 552-1134

Author of Preliminary Draft Environmental Impact Report
Environmental Impact Planning Corporation
319 Eleventh Street
San Francisco, California 94103
Project Manager: Ted Adams
With: Charles M. Salter, Consultants in Acoustics
Sally Woodbridge, Historical Resources Analyst

Project Sponsor
Eric Schou
Schou-Gallis
101 Mission Street
San Francisco, California 94105

Project Architects
Jorge De Quesada, Inc.
1700 Montgomery Street
San Francisco, California 94111
Cathal O'Doherty, Project Director

Project Consulting Engineers
Lee and Praszker
Consulting Civil Engineers
147 Natoma Street
San Francisco, California 94105

Critchfield Mechanical, Inc.
4085 Campbell Avenue
Menlo Park, California 94025

B. CITY AND COUNTY OF SAN FRANCISCO

San Francisco Department of Public Works
Division of Sanitary Engineering
770 Golden Gate Avenue
San Francisco, California 94102
Nat Lee, Engineering Associate

Division of Traffic Engineering
460 McAllister Street
San Francisco, California 94102
Stan Chin, Civil Engineer Assistant II

San Francisco Fire Department
260 Golden Gate Avenue
San Francisco, California 94102
Robert Rose, Chief, Division of Planning and Research
Gene Anderson, Chief, Bureau of Engineering and Water Supply
Eugene Calamorini, Captain, Planning and Research

San Francisco Police Department
Southern Station
850 Bryant Street
San Francisco, California 94103
John Parenti, Officer

San Francisco Transportation Policy Group
Center City Circulation Program
100 Larkin Street
San Francisco, California 94102
Chi-Hsin Shao

San Francisco Water Department
425 Mason Street
San Francisco, California 94102
George Nakanishi, Assistant Manager
H. Swain, District Water Serviceman

C. OTHER

AC Transit
Division of Planning and Research
1140 45th Street
Emeryville, California
Gene Gardener, Planner

Bay Area Rapid Transit District
800 Madison Street
Oakland, California
John Stanis, Planner
Ward Belding, Planning Staff

Golden Gate Bridge Highway and Transportation District
1011 Anderson Street
San Rafael, California 94902
Peter Dyson

San Mateo Transit District
400 S. El Camino Real
San Mateo, California 94402
Larry Stueck, Senior Transportation Planner

Pacific Telephone & Telegraph
140 New Montgomery Street
San Francisco, CA 94105
Don Hanson, Facility Engineer
Barney Parish, Study Group

VIII. DISTRIBUTION LIST

FEDERAL AND STATE AGENCIES

State Office of Intergovernmental Management (10)
State Clearinghouse
1400 - Tenth Street
Sacramento, California 95814

U.S. Environmental Protection Agency, Region IX
215 Fremont Street
San Francisco, California 94105

REGIONAL AGENCIES

Association of Bay Area Governments
Hotel Claremont
Berkeley, California 94705

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Bay Area Rapid Transit District
800 Madison Street
Oakland, California 94607

Golden Gate Bridge Highway & Transportation District
P.O. Box 9000, Presidio Station
San Francisco, California

Metropolitan Transportation Commission
Hotel Claremont
Berkeley, California 94705

San Mateo County Transit District
400 South El Camino
San Mateo, California 94402

CITY AND COUNTY OF SAN FRANCISCO

Peter Mardora
Mayor's Office
City Hall, Room 205
San Francisco, California 94102

San Francisco Planning Commission
100 Larkin Street
San Francisco, California 94102
- Toby Rosenblatt, President
- Susan Bierman
- Roger Boas
- Norman Karasick, Alternate
- Jerome Klein
- Yoshio Nakashima
- Richard Sklar
- Eugene Kelleher, Alternate
- Clarence Salazar
- Lee Woods, Secretary

Landmarks Preservation Advisory Board
100 Larkin Street
San Francisco, California 94102

Bureau of Building Inspection
450 McAllister Street
San Francisco, California 94102
Attention: Robert Levy, Superintendent

Water Department
Distribution Division
425 Mason Street
San Francisco, California 94102
Attention: John Kenck, Manager

San Francisco Fire Department
260 Golden Gate Avenue
San Francisco, California 94102
Attention: Assistant Chief Joseph Sullivan, Division of Planning and Research

CITY AND COUNTY OF SAN FRANCISCO (continued)

San Francisco Police Department
850 Bryant Street
San Francisco, California 94103
Attention: Paul Libert, Officer, Planning and Research

MEDIA

KBHK - Channel 44
420 Taylor Street
San Francisco, California 94108
Attention: Juana Samayoa

KCBS, News Radio
One Embarcadero Center
San Francisco, California 94115

KGO, Channel 7 (News)
277 Golden Gate Avenue
San Francisco, California 94102
Attention: Joyce Shank

KPIX, Channel 5 (News)
2655 Van Ness Avenue
San Francisco, California 94123

KRON, Channel 4 (News)
1001 Van Ness Avenue
San Francisco, California 94123

KQED Television Studio
500 - Eighth Street
San Francisco, California 94103

San Francisco Bay Guardian
27000 - Nineteenth Street
San Francisco, California 94110
Attention: Patrick Douglas City Editor

San Francisco Chronicle (2)
925 Mission Street
San Francisco, California 94103
Attention: Marshall Kilduff
Allen Temko

San Francisco Examiner
110 - Fifth Street
San Francisco, California 94103
Attention: Gerald Adams

San Francisco Progress
851 Howard Street
San Francisco, California 94103
Attention: Mike Mewhinney

LIBRARIES

Documents Department
City Library - Civic Center
San Francisco, California 94102
Attention: Faith Van Liere

Environmental Protection Agency Library
215 Fremont Street
San Francisco, California 94105
Attention: Jean Circiello

Government Documents Section
Stanford University
Stanford, California 94305

Government Publications Department
San Francisco State University
1630 Holloway Avenue
San Francisco, California 94132

Hastings College of the Law Library
198 McAllister Street
San Francisco, California 94102

GROUPS AND INDIVIDUALS

AIA
Northern California Chapter
790 Market Street
San Francisco, California 94102

Coldwell Banker Commercial
Brokerage Company
One Embarcadero Center
San Francisco, California 94111
Attention: Stan Cohn

Colonial Realty and Investment
Company
2323 Irving Street
San Francisco, California 94122
Attention: Jerry Carson

Daon Corporation
One Spear Street Tower,
Suite 2301
One Market Plaza
San Francisco, California 94105
Attention: John F. Markey

Jorge De Quesada, Inc.
1700 Montgomery Street
San Francisco, California 94111
Attention: Cathal O'Doherty,
Project Director

Downtown Association
582 Market Street
San Francisco, California 94104
Attention: Lloyd Pflueger, Mgr.

The Foundation for San
Francisco's Architectural
Heritage
2007 Franklin Street
San Francisco, California 94109
Attention: Linda Jo Fitz,
Acting Executive Director

Friends of the Earth
124 Spear Street
San Francisco, California 94105
Attention: Connie Parrish

Sue Hestor
4536 - 20th Ave.
San Francisco, California 94114

Pacific Gas and Electric Co.
77 Beale Street, #2429
San Francisco, California 94104

Pacific Gas and Electric Co.
Customer Service Department
245 Market Street
San Francisco, California 94105

Pacific Telephone and Telegraph
Company
140 New Montgomery Street
San Francisco, California 94105
Attention: Don Hanson,
Facility Engineer

San Franciscans for Reasonable
Growth
9 First Street
San Francisco, California 94105
Attention: John Elberling
Carl Imparato

San Francisco Beautiful
41 Sutter Street
San Francisco, California 94104
Attention: Mrs. H. Klussman,
President

San Francisco Building and
Construction Trades Council
400 Alabama Street, Room 100
San Francisco, California 94110
Attention: Stanley Smith

San Francisco Chamber of Commerce
465 California Street
San Francisco, California 94104
Attention: Richard Morten

San Francisco Ecology Center
13 Columbus Avenue
San Francisco, California 94111

San Francisco Junior Chamber of
Commerce
257 Kearny Street
San Francisco, California 94104

San Francisco Labor Council
3058 - Sixteenth Street
San Francisco, California 94103
Attention: Bernard Speckman

GROUPS AND INDIVIDUALS
(continued)

San Francisco Planning and
Urban Research Association
312 Sutter Street
San Francisco, California 94108

San Francisco Tomorrow
728 Montgomery Street, Room 34
San Francisco, California 94111
Attention: Suzanne Smith

Eric Schou
Schou-Gallis
101 Mission Street
San Francisco, California 94105

Sierra Club
530 Bush Street
San Francisco, California 94108

Transamerica Title Insurance Company
244 Pine Street
San Francisco, California 94104

Donald R. and James R. Viega
45 Stevenson Street
San Francisco, California 94105

Women's Chamber of Commerce
1963 - Twentysecond Street
San Francisco, California 94112

IX. BIBLIOGRAPHY

Association of Bay Area Governments, 1979 Bay Area Air Quality Plan, January 1979.

Bay Area Air Quality ManagementDistrict, Air Pollution and the San Francisco Bay Area, June 1977.

Bay Area Air Quality Management District, Guidelines for the Air Quality Impact Analysis of Projects, June 1975.

California Energy Commission, Conservation Division, Regulatories Establishing Energy Conservation Standards for New Residential and New Non-residential Buildings as Amended July 26, 1978, Sacramento, 1978, Table 2-1.

California Solid Waste Management Board, "Solid Waste Generation Factors in California," 1974.

CalTrans, Tenth Progress Report on Trip Ends Generation, CalTrans District 4, 1975.

City and County of San Francisco, City Planning Code, Section 210.3

__________, Department of City Planning, Commerce and Industry Element Policies and Objectives, A Proposal for Citizen Reviews, Adopted by the City Planning Commission, Resolution 8001, 29 June 1978, page 31.

__________, Department of City Planning, Draft Environmental Impact Report, 315 Howard Street Office Building, (EE79.196), 1980.

__________, Department of City Planning, Draft Environmental Impact Report, Pacific Gateway Office Building Project (EE78.61), May 1979.

__________, Department of City Planning, Final Environmental Impact Report, 101 California Street Project, (EE78.27) 1979.

__________, Department of City Planning Agency, Final Environmental Impact Report, Yerba Buena Center, EE78.207, Certified 25 April 1978.

__________, Department of City Planning, Guidelines for Environmental Evaluation - Transportation Impacts, 3 July 1980.

__________, Ordinance No. 274-72, Regulation of Noise, adopted 10 August 1973.

__________, "Revisions to the Transportation Element of the Master Plan Regarding Parking," 20 January 1977.

Environmental Impact Planning Corporation, Energy Impact Handbook, San Francisco, 1976, Table C-10f.

Roger and Nancy Olmsted, The San Francisco Waterfront: Report on Historical Cultural Resources, prepared for Wastewater Management, December 1977.

Lee and Praszker, "Geotechnical Input for EIR on 101 Mission Street, San Francisco," July 1980.

Sedway/Cooke, Downtown San Francisco Conservation and Development Planning Program, Phase I, 1979, page 48.

Tetra Technology, Inc., Energy Use in the Contract Construction Industry, Arlington, Virginia, 1975.

"Critical Movement Analysis" described in Circular No. 212, Transportation Research Board, January 1980.

U.S. Coast Survey Maps, 1853 and 1859; rare maps constained in the Bancroft Library, University of California, Berkeley, California, no other source known. Photographic reprints are available to the public through Bancroft Library.

URS/John A. Blume, "San Francisco Seismic Safety Investigation," prepared for the Department of City Planning, City of San Francisco, June 1974.

APPENDIX A

Intersection Capacity Analysis and Level of Service Definitions

Intersection Level of Service Definitions[1]

Level of service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.

Level of service B is in the zone of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted. The lower limit (lowest speed, highest volume) of this level of service has been associated with service volumes used in the design of rural highways.

Level of service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, with service volumes perhaps suitable for urban design practice.

Level of service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.

Level of service E cannot be described by speed alone, but represents operations at even lower operating speeds than in level D, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.

Level of service F describes forced flow operation at low speeds, where volumes are below capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion. In the extreme, both speed and volume can drop to zero.

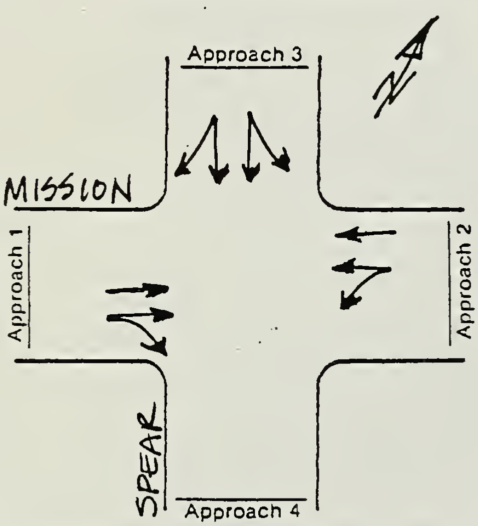
[1]Adapted from: Highway Research Board, Highway Capacity Manual, Spec. Rpt. No. 87, 1965.

INTERSECTION CAPACITY ANALYSIS

Intersection MISSION / SPEAR Design Hour P.M. PEAK

Other Conditions EXISTING TRAFFIC

1. Identify Lane Geometry



4. Left Turn Check

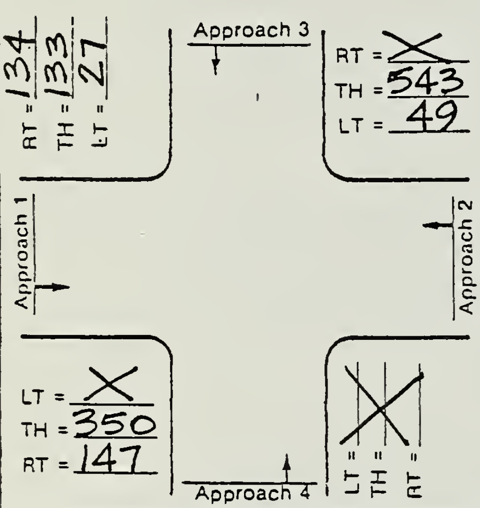
	Approach 1	2	3	4
a. Number of change intervals per hour				
b. Left turn capacity on change interval, in vph				
c. G/C Ratio				
d. Opposing volume in vph				
e. Left turn capacity on green, in vph				
f. Left turn capacity in vph (b + e)				
g. Left turn volume in vph				
h. Is volume > capacity (g > f)?				

6b. Volume Adjustment for Multiphase Signal Overlap

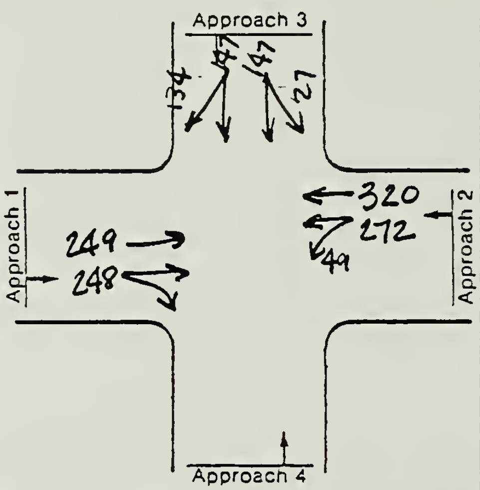
Probable Phase	Possible Critical Volume in vph	Volume Carryover to next phase	Adjusted Critical Volume in vph

2φ

2. Identify Volumes, in vph



5. Assign Lane Volumes, in vph



7. Sum of Critical Volumes

147 + 320 + — + —

= 467 vph

8. Intersection Level of Service

A

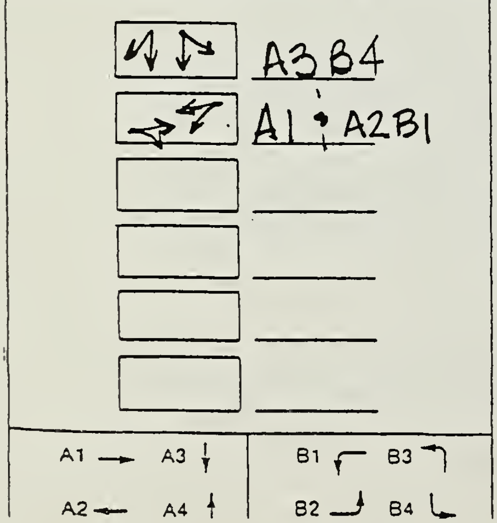
9. Recalculate

Geometric Change ______

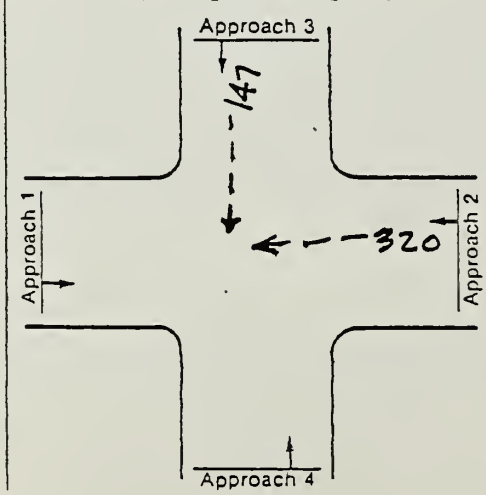
Signal Change ______

Volume Change ______

3. Identify Phasing



6a. Critical Volumes, in vph (two phase signal)



Service Level Ranges

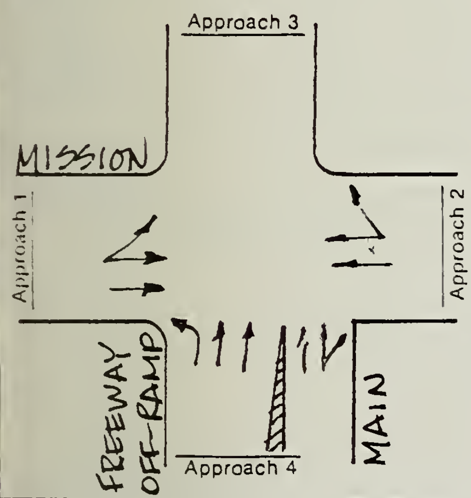
Level	Sum of Critical Volumes 2 Phase	3 Phase	4+ Phases
A	900	855	825
B	1050	1000	965
C	1200	1140	1100
D	1350	1275	1225
E	1500	1425	1375
F	not applicable		

INTERSECTION CAPACITY ANALYSIS

Intersection MISSION / MAIN Design Hour A.M. PEAK

Other Conditions EXISTING TRAFFIC

1. *Identify Lane Geometry*



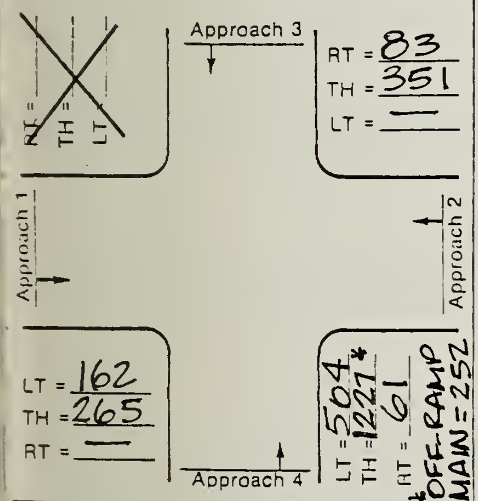
4. *Left Turn Check*

	Approach 1	2	3	4
a. Number of change intervals per hour				
b. Left turn capacity on change interval, in vph				
c. G/C Ratio				
d. Opposing volume in vph				
e. Left turn capacity on green, in vph				
f. Left turn capacity in vph (b + e)				
g. Left turn volume in vph				
h. Is volume > capacity (g > f)?				

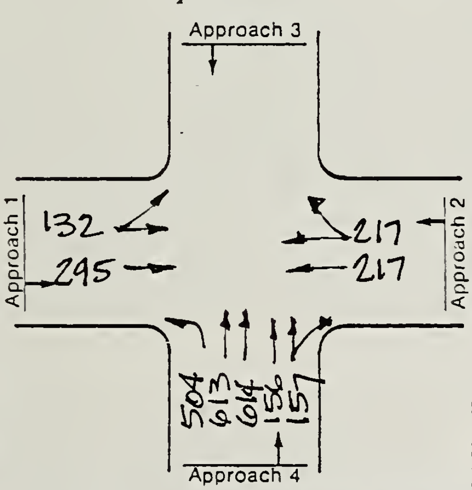
6b. *Volume Adjustment for Multiphase Signal Overlap*

Probable Phase	Possible Critical Volume in vph	Volume Carryover to next phase	Adjusted Critical Volume in vph
	2ϕ		

2. *Identify Volumes, in vph*



5. *Assign Lane Volumes, in vph*



7. *Sum of Critical Volumes*

614 + 217 + 162 + — = 993 vph

8. *Intersection Level of Service*

B

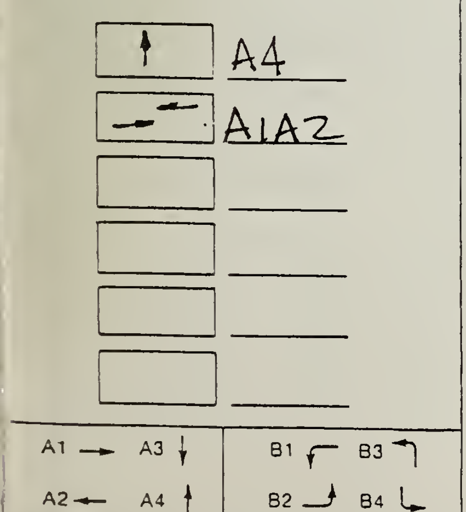
9. *Recalculate*

Geometric Change ______

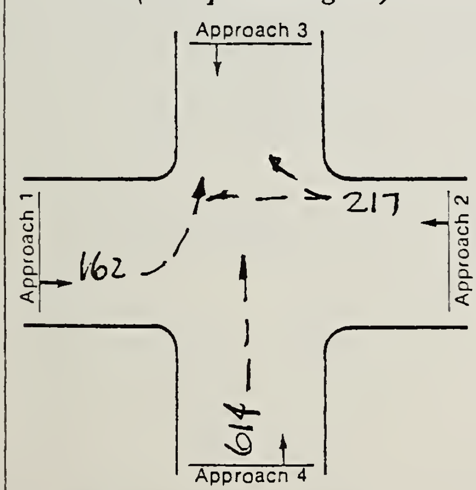
Signal Change ______

Volume Change ______

3. *Identify Phasing*



6a. *Critical Volumes, in vph (two phase signal)*



Service Level Ranges

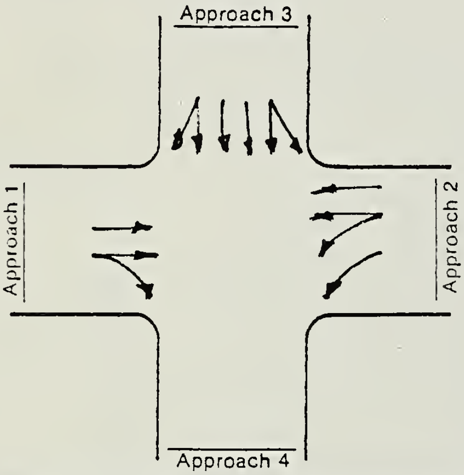
Level	Sum of Critical Volumes 2 Phase	3 Phase	4+ Phases
A	900	855	825
B	1050	1000	965
C	1200	1140	1100
D	1350	1275	1225
E	1500	1425	1375
F	not applicable		

INTERSECTION CAPACITY ANALYSIS

Intersection MISSION / BEALE Design Hour P.M. PEAK

Other Conditions EXISTING TRAFFIC

1. *Identify Lane Geometry*



4. *Left Turn Check*

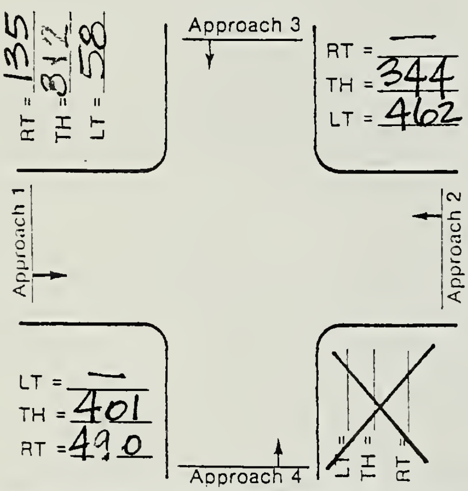
	Approach 1	2	3	4
a. Number of change intervals per hour				
b. Left turn capacity on change interval, in vph				
c. G/C Ratio				
d. Opposing volume in vph				
e. Left turn capacity on green, in vph				
f. Left turn capacity in vph (b + e)				
g. Left turn volume in vph				
h. Is volume > capacity (g > f)?				

6b. *Volume Adjustment for Multiphase Signal Overlap*

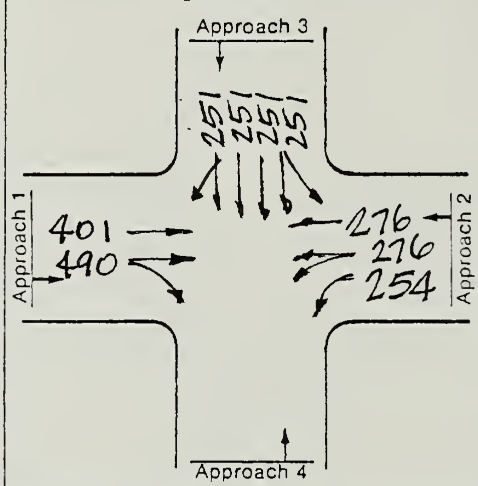
Probable Phase	Possible Critical Volume in vph	Volume Carryover to next phase	Adjusted Critical Volume in vph

3Ø

2. *Identify Volumes, in vph*



5. *Assign Lane Volumes, in vph*



7. *Sum of Critical Volumes*

490 + 251 + 276 + —

= 1017 vph

8. *Intersection Level of Service*

C

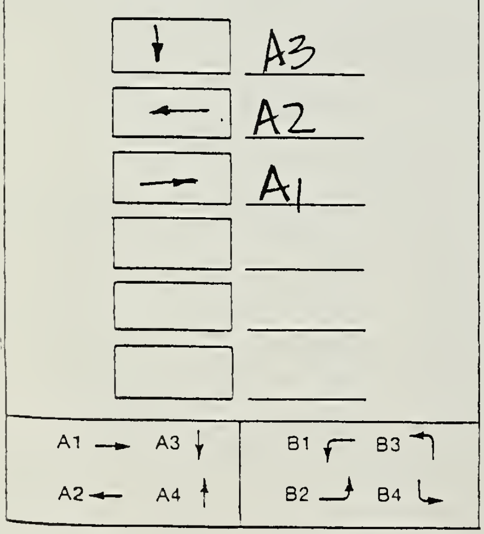
9. *Recalculate*

Geometric Change ________

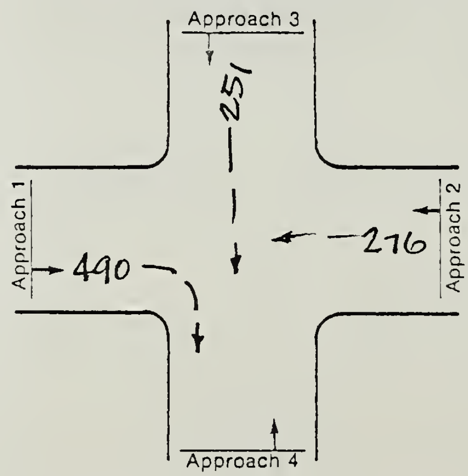
Signal Change ________

Volume Change ________

3. *Identify Phasing*



6a. *Critical Volumes, in vph (two phase signal)*



Service Level Ranges

Level	Sum of Critical Volumes 2 Phase	3 Phase	4+ Phases
A	900	855	825
B	1050	1000	965
C	1200	1140	1100
D	1350	1275	1225
E	1500	1425	1375
F	not applicable		

APPENDIX B

Fundamental Concepts of Environmental Noise

This section provides background information to aid in understanding the technical aspects of this report.

Three dimensions of environmental noise are important in determining subjective response. These are:

a. the intensity or level of the sound;
b. the frequency spectrum of the sound;
c. the time-varying character of the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or Hertz (Hz). Most of the sounds which we hear in the environment do not consist of a single frequency, but of a broad band of frequencies, differing in level. The quantitative expression of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Fortunately, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively and severely deemphasizes the importance of frequency components below 1000 Hz, with mild deemphasis above 5000 Hz. This type of frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency midrange.

The weighting curve described above is called "A" weighting, and the level so measured is called the "A-weighted sound level", or simply "A-level".

The A-level in decibals is expressed "dBA"; the appended letter "A" is a reminder of the particular kind of weighting used for the measurement. In practice, the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All U.S. and international standard sound level meters include such a filter. Typical A-levels measured in the environment and in industry are shown in Figure A-1.

Although the A-level may adequately describe environmental noise at any instant in time, the fact is that the community noise level varies continuously. Most environmental noise includes a conglomeration of distant noise sources which creates a relatively steady background noise in which no particular source is identifiable. These distant sources may include traffic, wind in trees, industrial activities, etc. These noise sources are relatively constant from moment to moment, but vary slowly from hour to hour as natural forces change or as human activity follows its daily cycle. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities or single vehicle passages, aircraft flyovers, etc., which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. The L10 is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the "average peak" noise. The L50 is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period. The L50 represents the median sound level. The L90 is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period. The L90 is used to describe the background noise.

As it is often cumbersome to describe the noise environment with these statistical descriptors, a single number descriptor called the Leq is also widely used. The Leq is defined as the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. The Leq is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises.

During the nighttime, exterior background noises are generally lower than the daytime levels. However most house-

	Decibels A-Weighted	
CIVIL DEFENSE SIREN (100')	140	THRESHOLD OF PAIN
JET TAKEOFF (200')	130	THRESHOLD OF PAIN
	120	THRESHOLD OF PAIN
RIVETING MACHINE	110	ROCK MUSIC BAND
EMERGENCY ENGINE-GENERATOR (6') DC-10 FLYOVER (700')	100	PILE DRIVER (50')
SUBWAY TRAIN (20')	90	BOILER ROOM PRINTING PRESS PLANT
PNEUMATIC DRILL (50')	80	GARBAGE DISPOSAL IN HOME (3') INSIDE SPORTS CAR, 50 MPH
FREIGHT TRAIN (100') VACUUM CLEANER (10') SPEECH (1')	70	
	60	AUTO TRAFFIC NEAR FREEWAY LARGE STORE ACCOUNTING OFFICE
LARGE TRANSFORMER (200')	50	PRIVATE BUSINESS OFFICE LIGHT TRAFFIC (100') AVERAGE RESIDENCE
	40	MINIMUM LEVELS, RESIDENTIAL AREAS IN SAN FRANCISCO AT NIGHT
SOFT WHISPER (5')	30	
RUSTLING LEAVES	20	RECORDING STUDIO
	10	MOSQUITO (1')
THRESHOLD OF HEARING IN YOUTHS (1000-4000 Hz)	0	

NOTE: The distance (in feet) between the source and listener is shown in parenthesis.

Figure A-1: TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND IN INDUSTRY hold noise also decreases at night and exterior noises become very noticeable. Further most people are sleeping at night and are very sensitive to noise intrusion.

To account for human sensitivity to nighttime noise levels a descriptor, Ldn, (day-night equivalent sound level) was developed. The Ldn divides the 24-hour day into the daytime of 7 am to 10 pm and the nighttime of 10 pm to 7 am. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Ldn, then, is the A-weighted average sound level in decibels during a 24-hour period with 10 dBA added to the hourly Leqs during the nighttime. For highway noise environments the Leq during the peak traffic hour is approximately equal to the Ldn.

The effects of noise on people can be listed in three general categories:

1. subjective effects of annoyance, nuisance, dissatisfaction;
2. interference with activities such as speech, sleep, learning;
3. physiological effects such as startle, hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Unfortunately, there is as yet no completely satisfactory measure of the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual past experiences with noise.

Thus, an important parameter in determining a person's subjective reaction to a new noise is the existing noise environment to which one has adapted: the so-called "ambient" noise. "Ambient" is defined as "the all-encompassing noise associated with a given environment, being a composite of sounds from many sources, near and far". In general, the more a new noise exceeds the previously existing ambient, the less acceptable the new noise will be judged by the hearers.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report:

a) Except in carefully controlled laboratory experiments, a change of only 1 dBA cannot be perceived.
b) Outside of the laboratory, a 3-dBA change is considered a just-noticeable difference.

c) A change in level of at least 5 dBA is required before any noticeable change in community response would be expected.

d) A 10-dBA change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse change in community response.

APPENDIX C

Microclimate Impact Study

I. INTRODUCTION

Architects, engineers, and city planners designing urban structures are limited by the lack of information on wind effects due to structures, such as pedestrian discomfort and wind-caused mechanical problems with doors, windows, and ventilating systems. Once a structure is built, remedial measures (if they exist at all) usually are expensive.

It is virtually impossible to anticipate, by analysis or intuition, the winds that will be caused by a structure, as they are determined by complex interactions of forces. Fortunately it is possible to predict the wind patterns and pressures around structures by testing scale models in a wind tunnel which can simulate natural winds near the ground. This allows the designer to foresee possible environmental and mechanical problems and alleviate them before the building is erected.

Data from wind tunnel tests can be combined with climatological data in analysis of the effect of a proposed structure on pedestrians in terms of human comfort. The frequency distribution of wind strengths at pedestrian level, combined with temperature data and shadow patterns of the proposed structure and its surroundings, can be used to forecast comfort at pedestrian levels.

II. SUMMARY

Wind tunnel tests of scale models were conducted for the existing site and the proposed project for the two most frequent wind directions in San Francisco. The project site was found to have generally low winds for both the westerly and northwesterly directions. The wind environment would not change with construction of the proposed project, as the project area is sheltered upwind highrises. The proposed building would cast shadows across the Mission/Spear intersection at midday in all seasons. The frequency of discomfort for pedestrians at this intersection would be increased by the new area of shade.

III. BUILDING AND SITE DESCRIPTION

The project site is the southern corner of the Spear Street/ Mission Street intersection. The site is located generally east of the downtown highrise corridor along Market Street. The site is currently occupied by a three-story warehouse.

The proposed building would be 20 stories high. The rectangular structure would fill the entire site. The main entry way would front on Spear Street, with a second entrance on Mission Street.

IV. MODEL AND WIND TUNNEL FACILITIES

Model

Scale models of the proposed buildings and the structures surrounding the area for a distance of several blocks were constructed of polystyrene and urethane foams at a scale of 1 inch equals 30 feet. Building configurations and heights were obtained from the Sanborn maps at the San Francisco Department of City Planning and from site visits.

Wind Tunnel Facilities

The Environmental Impact Planning Corporation boundary layer wind tunnel was designed specifically for testing architectural models. The working section is 7 feet wide, 43 feet long, and 5 feet high. Wind velocities in the tunnel can be varied from 3.5 mph to 13 mph. The flow characteristics around sharp-edged objects, such as architectural models, are constant over the entire speed range. Low speeds are used for tracer smoke, high speeds for windspeed measurements.

Simulation of the characteristics of the natural wind is facilitated by an arrangement of turbulence generators and roughness upwind of the test section. These allow adjustments in wind characteristics to provide for different scale models and varying terrain upwind of the project site.

Measurements of windspeed around the model are made with a hot-wire anemometer, a device that relates the cooling effect of the wind on a heated wire to the actual windspeed. The flow above the city is measured by a Pitot tube connected to a micromanometer. The Pitot tube and micromanometer measure directly the pressure difference between moving and still air. This pressure difference is then related to the actual windspeed. Flow visualization is achieved by use of floodlit smoke.

V. TESTING METHODOLOGY

Simulation of Flow

The most important factors in ensuring similarity between flow around a model in a wind tunnel and flow around the actual building are the structure of the approach flow and the geometric similarity between the model and the prototype. A theoretical discussion of the exact criteria for similarity is not included in this paper, but may be found elsewhere (Cermak, 1966, or Cermak and Arya, 1970)

The variation of windspeed with height (wind profile) was adjusted for the scale of the model and the type of terrain upwind of the the site. The profiles used were those generally accepted as adequately describing the flow over that type of terrain (Lloyd, 1967).

Testing Procedure

The windflow characteristics of the site in its current state were investigated to ascertain the present wind environment. Windspeeds and wind directions at specified points throughout the site were measured and recorded. Wind direction was measured by releasing smoke at each point and recording the direction in which the smoke traveled. Windspeed measurements were made at the same points, at a scale height of 5 feet above the ground. A hotwire anemometer probe is required to make these measurements within a fraction of an inch of the model surfaces. The probe is repeatedly calibrated against the absolute reading of a Pitot tube and micromanometer. Velocity readings close to the model are generally accurate to within 10% of the true velocity.

Measurements for the building are made by keeping the probe in place while replacing the existing buildings with each proposal under consideration. The grid of measurement points extended to the point where project impacts were less than 10% of existing windspeeds.

Before and after each test run, a calibration measurement was made above the model. The purpose of these measurements was to relate the wind tunnel measurements to actual wind records from U.S. Weather Service wind instrumentation located on the Federal Building at 50 Fulton Street.

VI. TEST RESULTS AND DISCUSSION

Tests of windspeed and wind direction were conducted for 2 wind directions.

Measured windspeeds are expressed as percentages of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station. Thus, a plotted value of 52 means that the measured windspeed is expected to be 52% of the windspeed recorded by the Weather Service when winds are from that particular direction.

The plotted values can be interpreted in terms of general "windiness" using the scale below. This scale is subjective and is based on information gathered from similar studies in San Francisco.

Velocity	Percentage of Calibration Windspeed
Low	0-0.19
Moderately low	0.20-0.29
Moderate	0.30-0.49
Moderately high	0.50-0.69
High	0.70-1.00
Very high	1.00

greater than

The plotted values are not actual windspeeds, but ratios. Thus, a point having a "very high" windspeed ratio would still experience light winds on a near-calm day. Likewise, a point found to have "low" winds could experience significant winds on a windy day.

Wind direction is indicated by an arrow pointing in the direction of flow. Where wind direction fluctuated, two arrows representing the principal flow directions were plotted.

Areas of fluctuating winds are normally turbulent, as are areas of spiraling motion; the latter are denoted by curved arrows.

Northwest Wind

Northwest winds occur 12 to 39% of the time in San Francisco, depending on the season. (In meteorology, a northwest wind blows from the northwest). Northwesterly and westerly winds are the most frequent and the strongest winds at all seasons in San Francisco. Northwest winds exceed 13 miles per hour 35% of the time and 25 miles per hour 3% of the time in summer. (These windspeed categories are used because wind frequency data are broken down into categories of 4-13 mph, etc.) Wind frequencies and speeds are lower in spring, fall, and winter.

Existing site conditions under northwest winds are shown in Figure 1. Existing windspeed ratios are shown in Figure 1. Ratios are low along Spear Street and along Mission Street near the site. The highest windspeed ratios were found at the Mission Street and Steuart Street intersection, where moderately low and moderate windspeed ratios were measured.

No changes in the wind pattern or speeds were found for the proposed project (Figure 2).

West Wind

West winds occur between 15 and 40% of the time, depending on the season. They exceed 13 miles per hour 29% of the time and 25 miles per hour 7% of the time in summer. Wind strengths and frequencies are somewhat lower in spring, fall and winter.

Existing conditions for west winds are shown in Figure 3. Windspeed ratios are moderately low along Spear Street west of Mission Street and at the eastern corner of the Main Street/ Mission Street intersection and low elsewhere near the site.

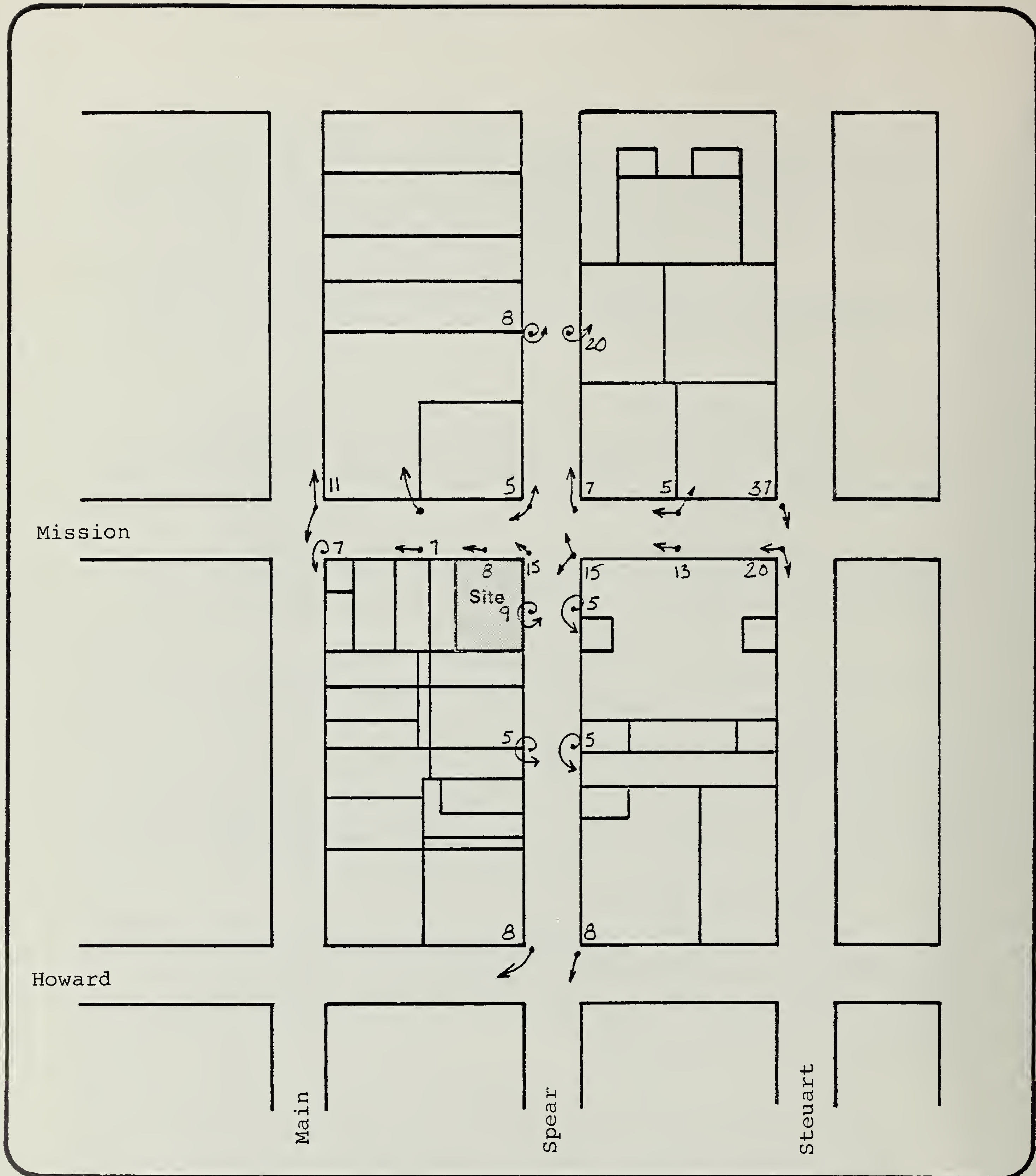
Only minor changes in the wind pattern and measured windspeed ratios would occur for the proposed project (Figure 4).

VII. SHADOW PATTERN ANALYSIS

Sun-shade patterns for the first day of each season at 1 p.m. are shown in Figures 5 to 7. The project would shadow portions of the Mission/Spear intersection in all seasons.

VIII. MITIGATION MEASURES

The project's adverse climatic impacts would be an increase in shadows for the Mission/Spear intersection. The extent of these shadows could be reduced by changing the building size and shape, or stepping the height of the building back from the Mission/Spear intersection.

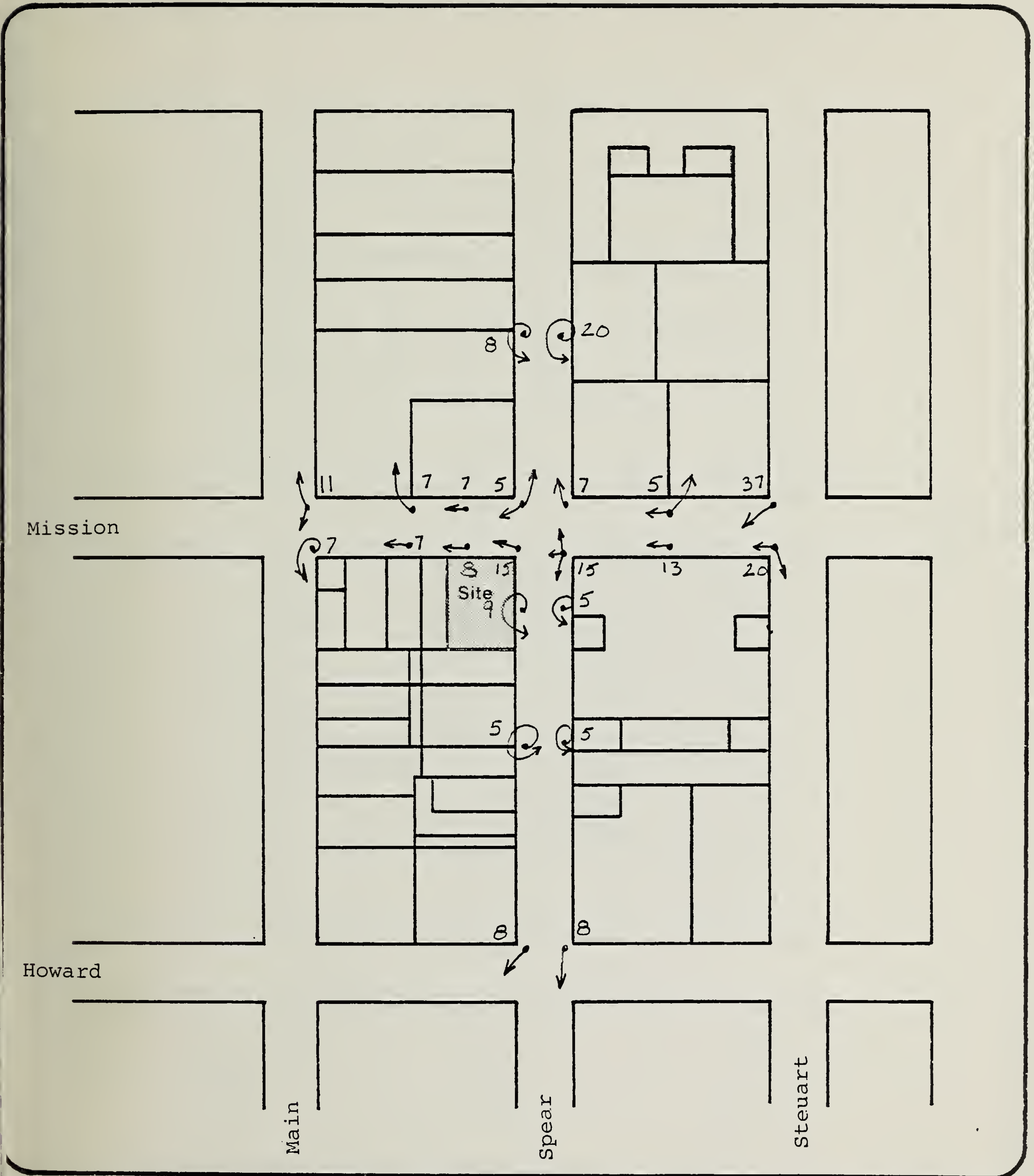


Existing Site
Northwest Winds

North

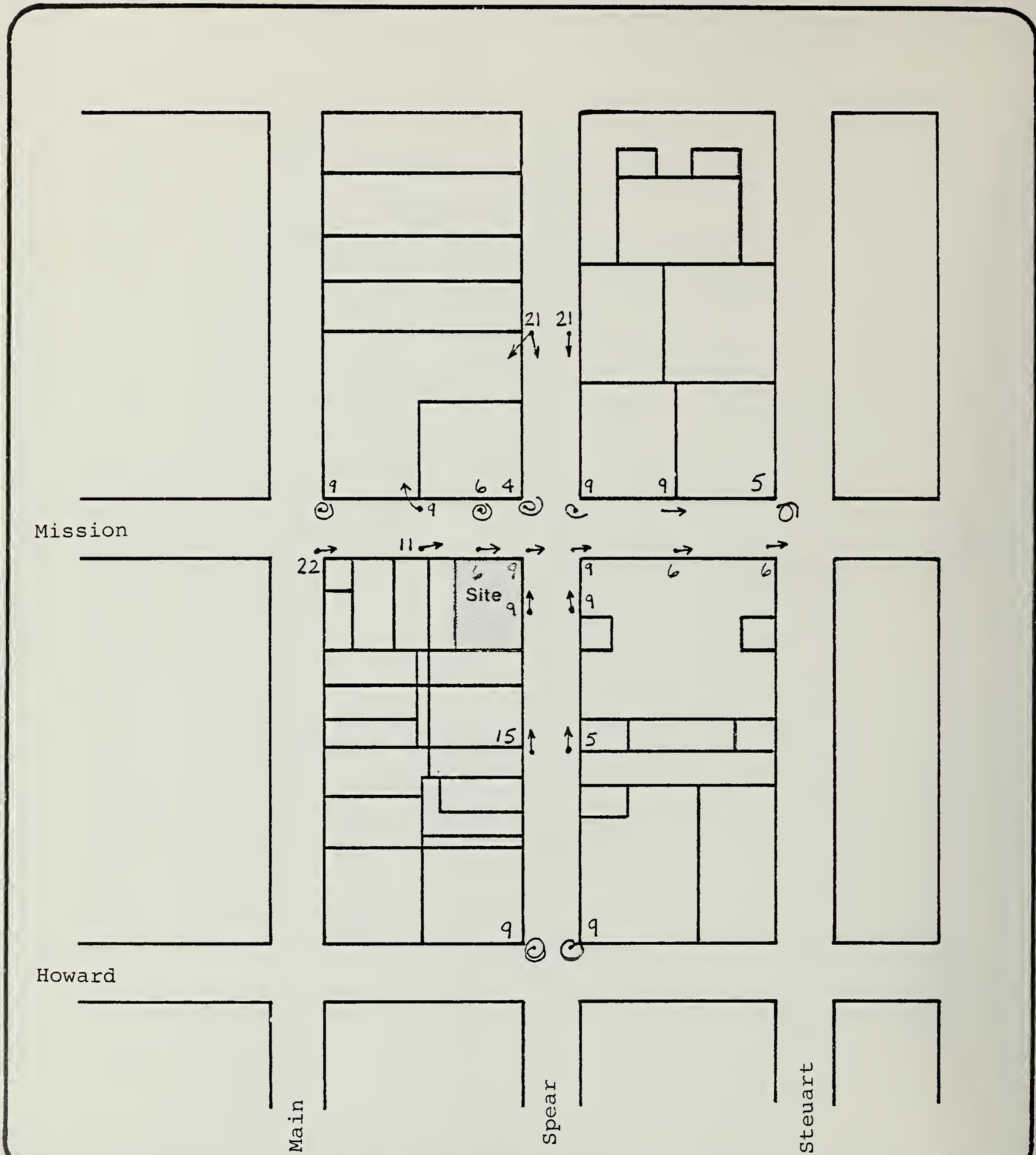
0 75 150 300
Scale Feet

Figure No. 1



Proposed Project Northwest Winds

Figure No. 2

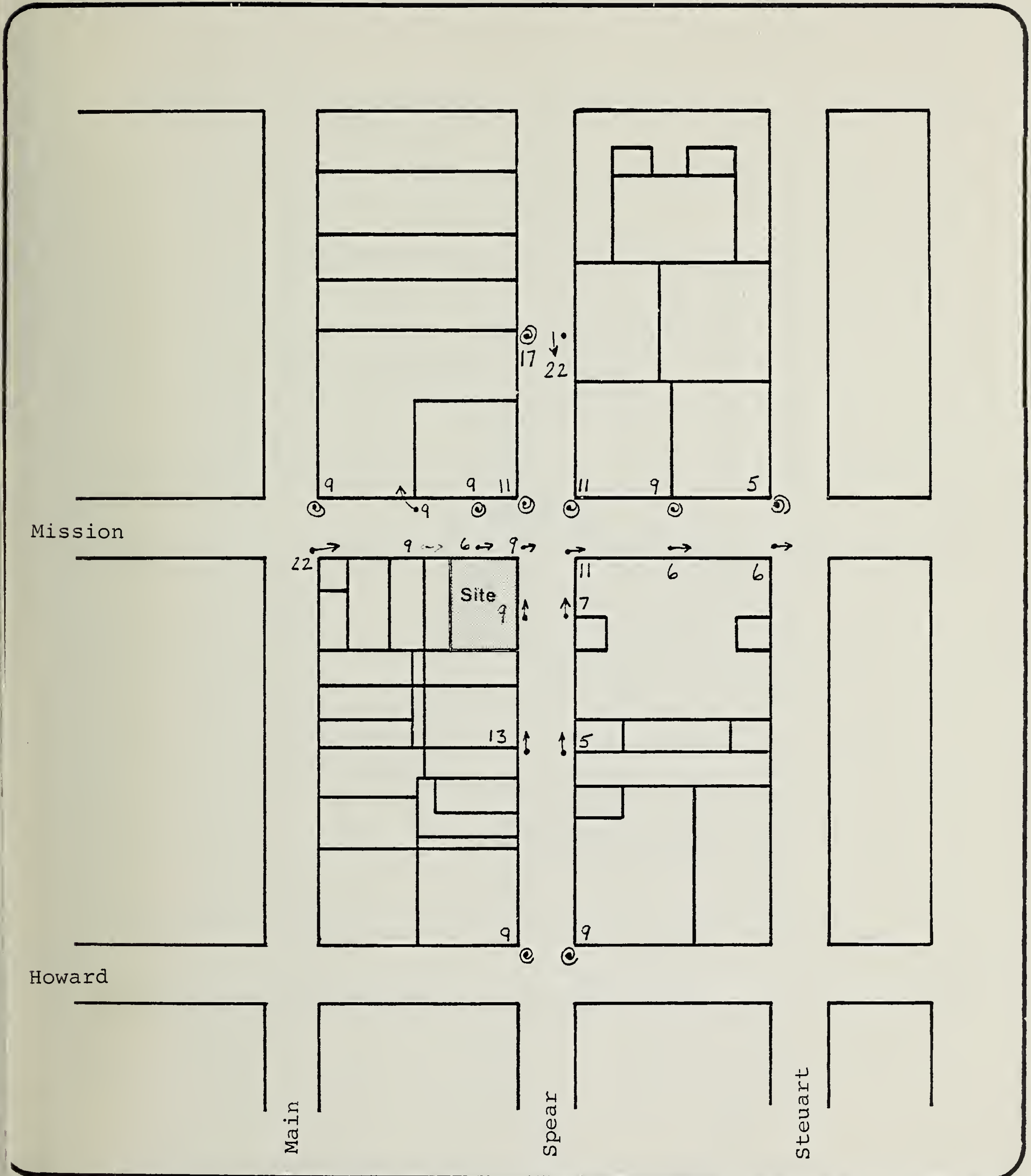


Existing Site
West Winds

North

0 75 150 300
Scale Feet

Figure No. 3

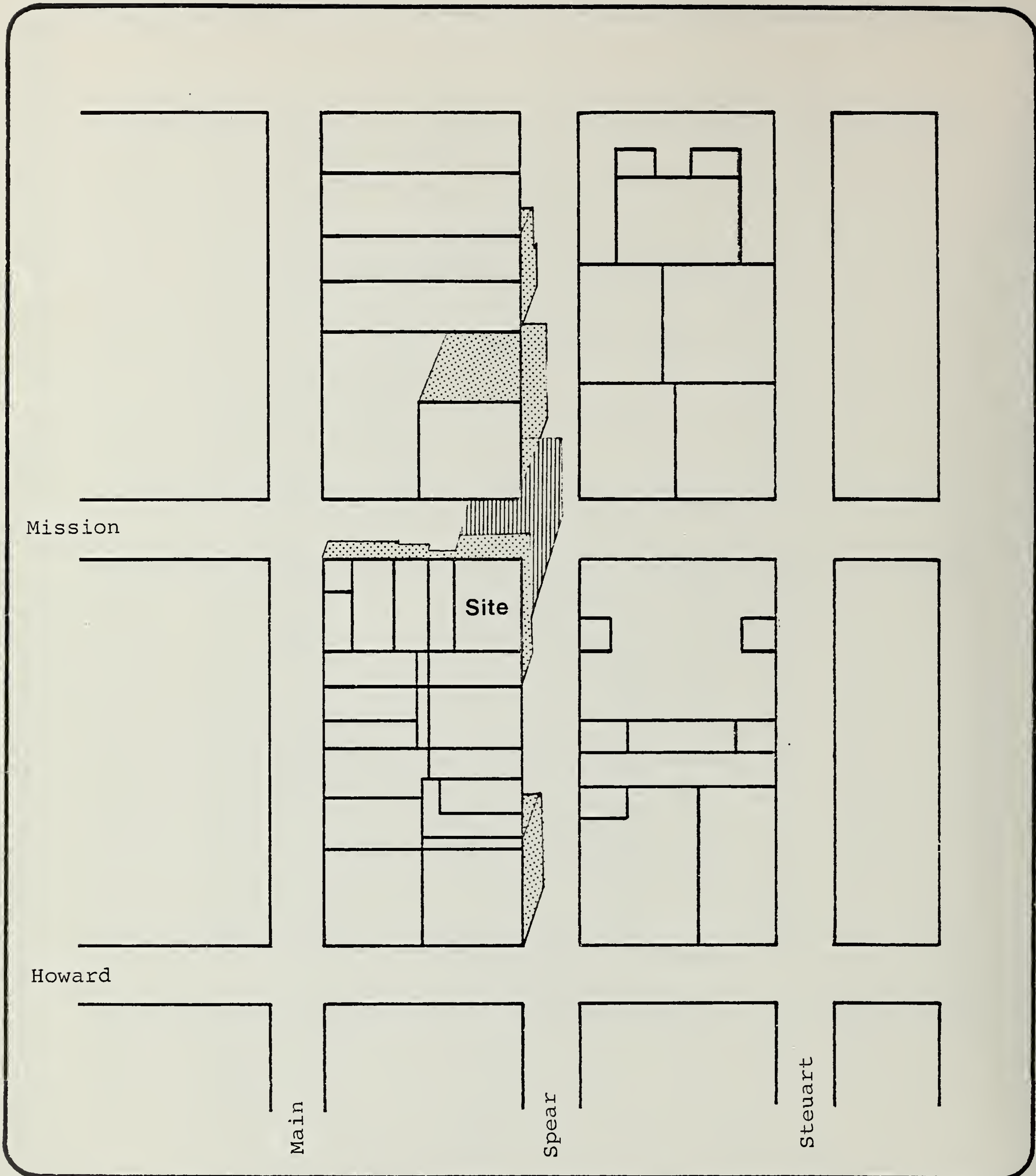


Proposed Project
West Winds

North

0 75 150 300
Scale Feet

Figure No. 4



Shadow Patterns - March 21 and September 21, 1:00 p.m.

Existing Shadows

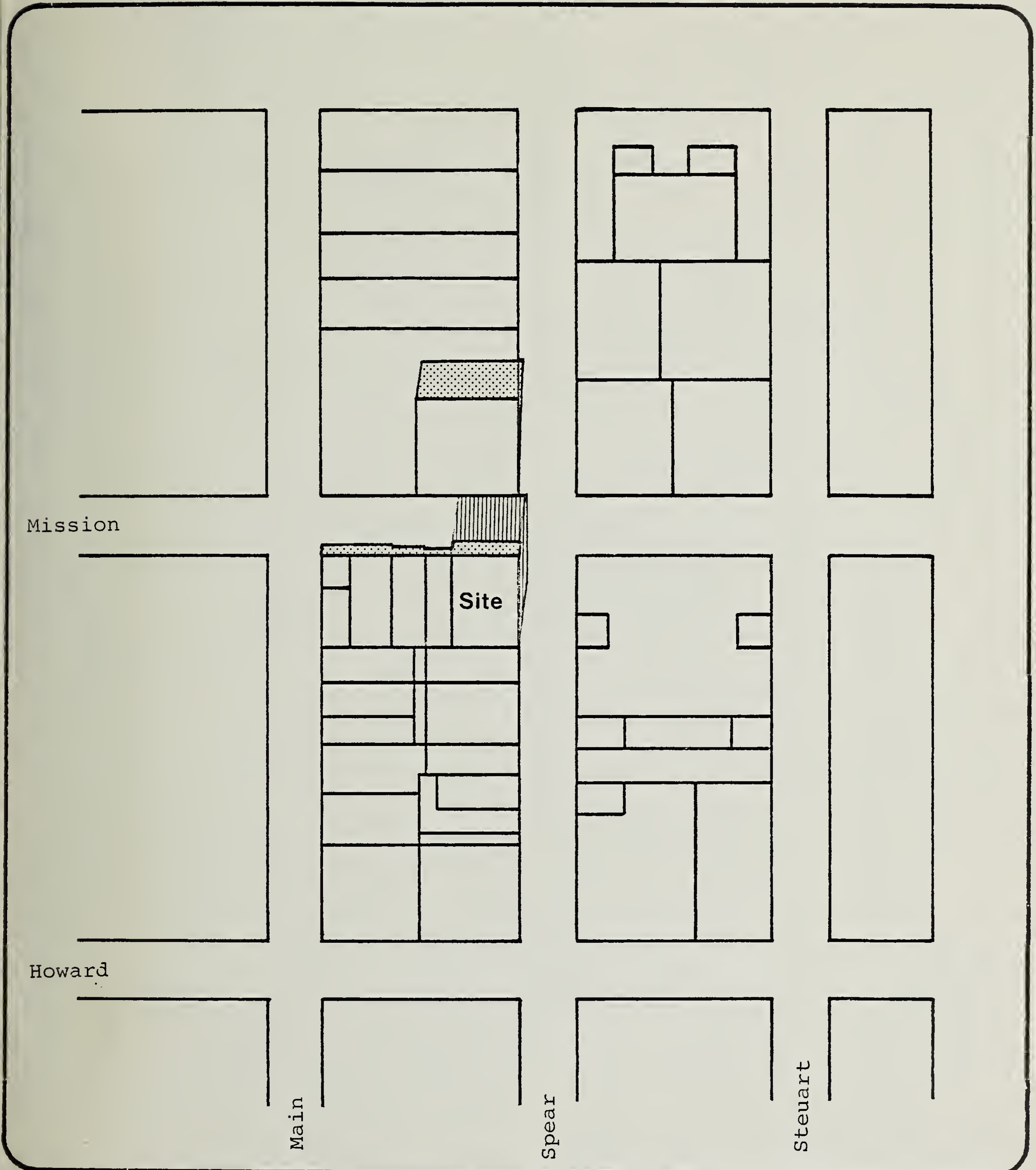
Shadows added by Project

North

0 75 150 300

Scale Feet

Figure No. 5



Shadow Patterns
June 21, 1:00 p.m.

Existing Shadows

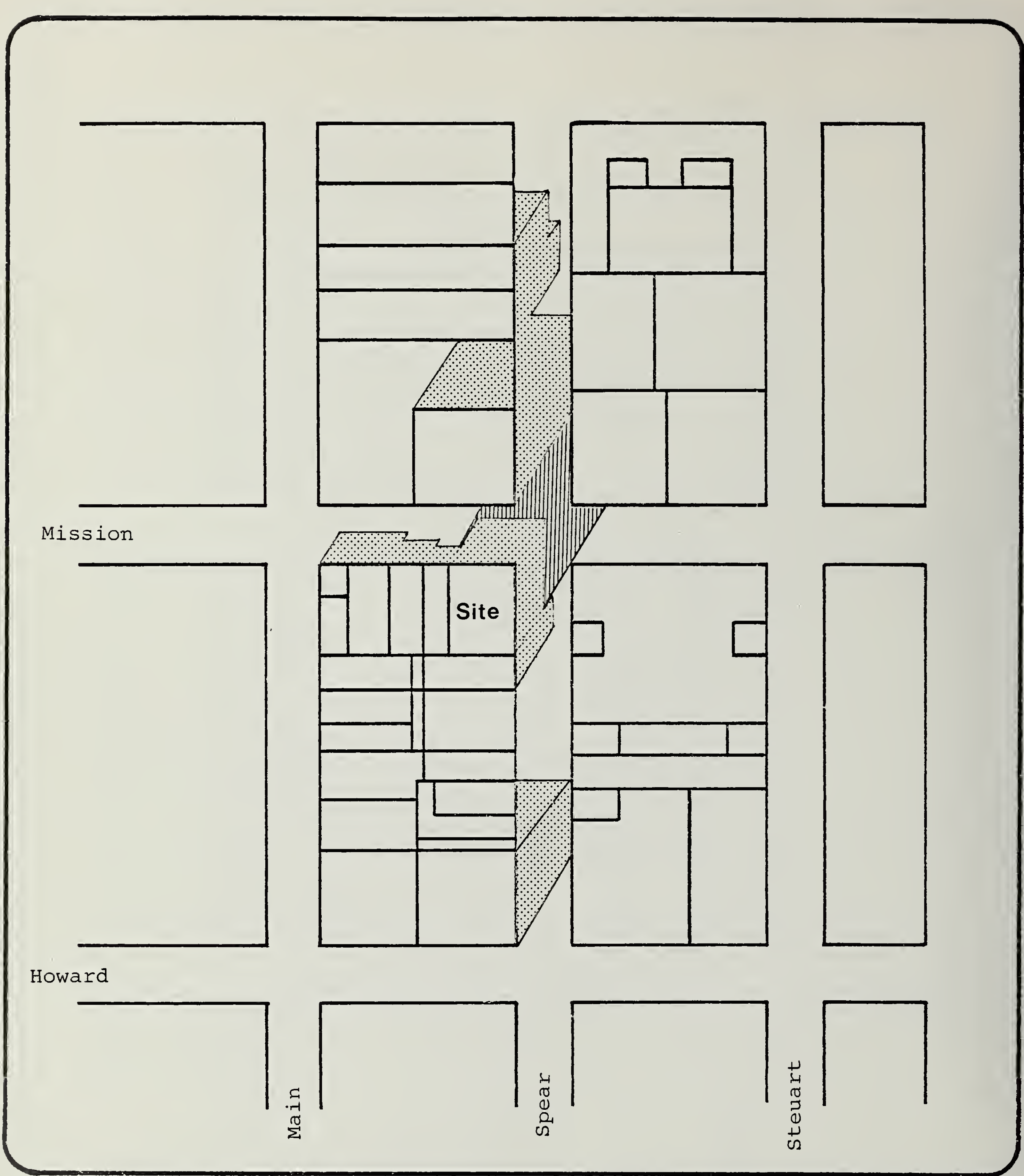
Shadows added by Project

North

0 75 150 300

Scale Feet

Figure No. 6



Shadow Patterns
December 21, 1:00 p.m.

Existing Shadows

Shadows added by Project

North

0 75 150 300

Scale Feet

Figure No. 7